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<td>(state) Department of Transportation</td>
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<td>USAID</td>
<td>U.S. Agency for International Development</td>
</tr>
<tr>
<td>USDA</td>
<td>U.S. Department of Agriculture</td>
</tr>
<tr>
<td>USDOT</td>
<td>U.S. Department of Transportation</td>
</tr>
<tr>
<td>USMCA</td>
<td>U.S.-Mexico-Canada Agreement</td>
</tr>
<tr>
<td>USTDA</td>
<td>U.S. Trade Development Agency</td>
</tr>
<tr>
<td>USTR</td>
<td>U.S. Trade Representative</td>
</tr>
<tr>
<td>UTP</td>
<td>Unified Transportation Program</td>
</tr>
<tr>
<td>VL</td>
<td>very large</td>
</tr>
<tr>
<td>VMT</td>
<td>vehicle-miles traveled</td>
</tr>
</tbody>
</table>
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Chapter 1  Introduction

1.1  Background

Texas and Mexico share a long history that includes economic, cultural, and social relations. The economic relationship has evolved from the rural agriculture of the late 1600s to the binational supply chains that produce automobiles, jet aircrafts, and advanced electronics today.

The Texas-Mexico border connects the people and commerce of the United States and Mexico. The two countries share a 1,954-mile common border—64 percent, or 1,254 miles, is shared between Texas and Mexico.

The 1,254-mile Texas-Mexico border follows the Rio Grande River from El Paso to the Gulf of Mexico—a distance longer than from Austin to Washington, DC, or from Austin to Mexico City.

Twenty-eight vehicular border crossings along the Texas-Mexico border and the Santa Teresa, NM vehicle border crossing1 connect more than 7 million residents2 and businesses in a vibrant, complex, and growing border region.

North America’s Busiest Trade Gateway

The Texas-Mexico border is North America’s busiest trade gateway. Mexico is the largest trading partner of Texas and 68 percent of trade between the U.S. and Mexico passes through the Texas-Mexico border.

The amount of trade between the U.S. and Mexico more than tripled between 1994 and 2019, increasing from $173 billion to $615 billion.3

Texas-Mexico trade has also grown rapidly, increasing by 267 percent from $58 billion in 1994 to $213 billion in 2019.4 That is more than the entire U.S. trades with any single country in Europe. This translates to over $24 million of trade crossing the border every hour.

---

1 The border crossing in Santa Teresa, NM is analyzed as part of the BTMP because it is within the El Paso’s Metropolitan Planning Organization (MPO) planning area boundary.
2 U.S. Census Bureau, Instituto Nacional de Estadística y Geografía (INEGI).
3 Inflation adjusted to 2019 dollars, U.S. Census Bureau, Foreign Trade “Trade in Goods with Mexico.”
4 Inflation adjusted to 2019 dollars, BTS historical archives.
In 2019, Texas traded with Mexico more than three times the amount Texas traded with China, the state’s second-largest trading partner. Driven by sustained trade growth, in March 2019 and again in February 2020, the Port of Laredo overtook the Port of Los Angeles as the top international trade gateway in the U.S.\(^5\)

The 1994 North American Free Trade Agreement (NAFTA) stabilized trade and helped catalyze its growth among the U.S., Mexico, and Canada, significantly strengthening their economic ties. Additionally, the 2020 U.S.-Mexico-Canada Agreement (USMCA) is expected to further bolster growth and enhance the relationship between the U.S., Mexico, and Canada. Today, the bilateral relationship between Texas and Mexico goes beyond trade and includes close commercial, cultural, and educational ties. The relationship between the U.S. and Mexico has a direct impact on the lives and livelihoods of millions of people.

**Economic Importance**

The Texas-Mexico border is a key contributor to the local, regional, state, and national economies of the U.S. and Mexico. In 2019, the economic impact of cross-border trade and travel for Texas was $73.5 billion dollars GDP.

Trade across the U.S.-Mexico border has strengthened the competitiveness of both U.S. and Mexico and created jobs in both countries. U.S.-Mexico trade supports more than 5 million jobs across the U.S., and Texas-Mexico trade supports more than 382,000 jobs in Texas.\(^6\) Economic activity in the Texas border region represents $116.4 billion in 2018, while economic activity in the Mexico border states represents approximately 3.7 trillion pesos or $169.5 billion in 2018.\(^7\) Of this, almost one-half of the gross domestic product (GDP) in Texas border counties and approximately two-thirds of the GDP in Mexico border states are dependent on international trade.\(^8\)

Much of this economic activity is related to Mexican manufacturing production, where businesses in Mexico and the U.S. are partners in cross-border manufacturing through a process known as production sharing, meaning the two countries work together to build and assemble products. A full 40 percent of the content in U.S. imports from Mexico is produced in the U.S.\(^9\) This economic vitality associated with Mexican manufacturing, logistics services, and other trade-related businesses continues to underpin rapid population growth, strong employment gains, and burgeoning trade along the U.S.-Mexico border.

The economy of the Texas-Mexico border region is growing rapidly.

---

\(^5\) Analysis of U.S. Census Trade Data by WorldCity, as reported by FreightWaves.
\(^6\) Texas 85th Legislature, House Resolution 1025 (2017).
\(^7\) U.S. Bureau of Economic Analysis GDP by county and metropolitan area, INEGI system of National Accounts of Mexico.
\(^8\) U.S. Bureau of Economic Analysis GDP by county and metropolitan area, INEGI System of National Accounts of Mexico.
Employment

Growth in regional employment and cross-border trade continues, driven by the overall North American population and economic growth and border region commercial and social ties.

Between 1990 and 2019, the border region experienced 97 percent employment growth—from 1.5 million to 2.9 million jobs across both countries. Increased manufacturing and trade have contributed to employment growth.

Population

The Texas-Mexico border region is growing—outperforming the U.S. and Mexico in population growth. The region added over 3 million residents from 1990 to 2019.

The Texas-Mexico border region is defined as 60 miles north and south of the border and is inclusive of three regions: El Paso/Santa Teresa/Chihuahua, Laredo/Coahuila/Nuevo León/Tamaulipas, and Rio Grande Valley/Tamaulipas.

Between 1990 and 2019, the regional population grew 70 percent, from 4.4 million to 7.4 million—this growth outpaced national trends in the U.S. and Mexico at large which experienced 32 and 54 percent growth respectively during this same period.

Transportation Infrastructure

Transportation infrastructure is the foundation for local, regional, national, and binational connections. The binational multimodal transportation infrastructure connects the cultural and commercial fabric of the Texas-Mexico border region and beyond.

The common link that sustains people and goods movement between the U.S. and Mexico is the multimodal transportation system.

The U.S. and Mexico share 49 vehicle and pedestrian border crossings, of which 28 are located between Texas and Mexico.

Of the 28 vehicle border crossings located in the Texas-Mexico border plus the Santa Teresa, NM border crossing, there are:

- 28 border crossings that process passenger vehicle (POV) movements.
- 24 border crossings that process pedestrian movements.
- 14 border crossings that process commercial vehicle (CMV) movements, with several of them processing two or more of these types of movements.

---

10 The border crossing in Santa Teresa, NM is analyzed as part of the BTMP because it is within the El Paso’s Metropolitan Planning Organization (MPO) planning area boundary.
Additionally, cross-border movements in the border region are further supported by:

- 6 freight rail crossings.\(^{11}\)
- 15 airports in Texas that have regularly scheduled flights to 31 airports throughout Mexico that serve as major hubs for cargo and small shipments.
- 7 seaports in Texas and 11 seaports in Mexico that currently support maritime trade between Texas and Mexico.
- 13 import and export pipeline terminals along the border that are most concentrated along the Gulf of Mexico near seaports.

### Moving People

The Texas-Mexico border facilitates more than 45 percent of the 188 million people crossing the border between the U.S. and Mexico.\(^{12}\) In 2019, more than 32 million cars, more than 20 million pedestrians, and more than 90,000 passenger buses crossed the Texas-Mexico border.\(^{13}\)

The number of northbound people crossing the Texas-Mexico border by all modes declined steadily between 1996 and 2019, which is a 37 percent decrease over the 24-year period. Most of that decline was driven by the reduction in northbound crossings of people using POVs.\(^{14}\) The cause for this decline likely relates to the high crossing times at the border, as well as other factors such as security, migration, and currency volatility.\(^{15}\) POV passengers moving northbound across the border decreased by 45 percent from 118 million in 1996 to 65 million in 2019, while the number of bus passengers and pedestrians increased during this period.

Northbound bus passengers increased by 5 percent from 1.6 million in 1996 to 1.7 million in 2019, and northbound pedestrians increased by 18 percent from 16.9 million in 1996 to 20 million pedestrians in 2019, partially due to increased wait times for POVs.\(^{16}\) The daily student movements in the Ciudad Juárez–El Paso region depend on a network of bridges and bus services. For example, college students from Juárez regularly travel to the University of Texas at El Paso and back home again via multiple bus connections.

---

\(^{11}\) The rail crossing at Presidio-Ojinaga is not currently open.

\(^{12}\) BTS Border Crossing Entry Data, Northbound 2019.

\(^{13}\) BTS Border Crossing Entry Data, Northbound 2019.

\(^{14}\) The largest decline in personal vehicle crossings occurred between 2001 and 2012. After 2012, the number of personal vehicle crossings has generally increased slowly.

\(^{15}\) TTI, “Toward Understanding the Pedestrian Travel on the Paso Del Norte Bridge,” 2012.

Future demand for cross-border travel will increase as the Texas border region adds over 400,000 residents by 2050 and the Mexico border region adds over 800,000 residents by 2050. This growth will also lead to increased use of the transportation system, including border crossings, highways, airports, pipelines, maritime, and rail connections. In most cases, users will experience increased levels of congestion.

**Moving Goods**

In 2019, over $451 billion in goods were traded across the Texas-Mexico border.\(^{18}\)

Goods movement increased significantly between 1996 and 2019. Northbound truck crossings increased by 107 percent from 2.2 million in 1996 to 4.5 million in 2019, and northbound railcar moves increased by 305 percent from 251,769 in 1996 to 1 million in 2019.\(^{19}\)

Of the $451 billion in U.S.-Mexico trade that crossed the Texas-Mexico border in 2019, 47 percent, or $213 billion, was direct trade between Texas and Mexico, while the 53 percent, or $238 billion, passed through Texas border crossings with origins or destinations in other U.S. states and Canadian provinces.\(^{20}\)

Trade with Mexico includes both parts and finished products, such as automobiles, vegetables, furniture, and clothing. Trade through the Texas-Mexico border reaches businesses and homes throughout the U.S., Mexico, and Canada. For example, most of the avocados consumed in the U.S. are grown in Michoacán in central Mexico. At supermarkets in Mexico City, consumers buy globally sourced products, including apples grown by farmers in Washington State and New York. The border transportation system makes these connections possible—allowing companies from both sides of the border to flourish and for people to access work, school, shopping, and social opportunities.

17 Texas Demographic Center, Texas Population Projections Program, 2018.
18 U.S. Bureau of Transportation Statistics, BTS Transborder Freight Data, 2019. Includes the border crossing at Santa Teresa, NM.
20 *Ibid* footnote 18. Includes the border crossing at Santa Teresa, NM.
Planning for the Future of the Border

The border transportation infrastructure must be positioned to meet current and future challenges and opportunities.

Given the past, current, and projected trends in population, employment, and cross-border movements of people and goods, planning for the future of the border transportation infrastructure is critical to sustaining the continued economic prosperity of the Texas-Mexico border region, the states, and the nations. A key opportunity is the USMCA, which is anticipated to generate greater certainty in the binational trade relation, encouraging investment in infrastructure, facilities, and operations along the U.S.-Mexico border. Other potential opportunities come with U.S.-China trade relations and the impacts of Coronavirus Disease 2019 (COVID-19), both of which are anticipated to result in reshoring manufacturing back to Mexico and the U.S. given uncertainties and supply chain risks.

Increasing congestion at Texas-Mexico border crossings and within the multimodal transportation networks will result from growth in cross-border movements of people and goods. Improving the capacity and operations of existing Texas-Mexico border crossings and multimodal transportation infrastructure is critical to alleviating traffic congestion, facilitating international trade, reducing environmental impacts, and improving the quality of life for residents in the border region.

The Texas-Mexico Border Transportation Master Plan (BTMP) will serve as a blueprint to prepare for the future.

1.2 Purpose of the BTMP

The BTMP builds on long-standing coordination and collaboration between Texas and Mexico regarding the binational planning, programming, and implementation of policies, programs, and projects to facilitate efficient and safe cross-border movement of people and goods. The BTMP builds on the following three regional border master plans developed between 2012 and 2013:

- El Paso/Santa Teresa- Chihuahua Border Master Plan
- Laredo-Coahuila/Nuevo León/Tamaulipas Border Master Plan
- Lower Rio Grande Valley—Tamaulipas Border Master Plan

The BTMP is a comprehensive, multimodal, long-range plan for the Texas-Mexico border region and identifies transportation issues, needs, challenges, opportunities, and strategies for moving people and goods efficiently and safely across the Texas-Mexico border, the border regions, and beyond. It outlines transportation policy, program, and project strategies that support Texas-Mexico, state, regional, and local economic competitiveness. Therefore, the BTMP takes a holistic approach to border planning, developing one plan for the entire Texas-Mexico border, with the understanding that the border is not a monolith and that each border region is distinct and has unique geographic, trade, economic, and population characteristics.
The BTMP serves as a blueprint for collaboration, coordination, partnerships, and decision-making regarding investment strategies to address cross-border multimodal transportation system challenges by:

- Outlining the Texas-Mexico border story, laying out the collective vision, and explaining how the plan supports local, regional, state, national, and binational goals and objectives for facilitating cross-border movement of people and goods.
- Identifying and designating the Texas-Mexico multimodal transportation system critical to the safe and efficient cross-border movement of people and goods along the Texas-Mexico border and beyond.
- Providing an assessment of past, present, and future transportation needs and challenges facing the cross-border movement of people and goods along the Texas-Mexico border region and beyond.
- Assessing the economic importance of the cross-border movement of people and goods and the economic impact of border delays and congestion at the Texas-Mexico border.
- Identifying robust policy, program, and project investment strategies and planning activities to enhance the continued safe and efficient cross-border movement of people and goods along the Texas-Mexico border region and beyond.
- Outlining a comprehensive action plan for implementing recommendations in the short, medium, and long terms to address current and future needs of cross-border movement of people and goods along the Texas-Mexico border and beyond.

**1.2.1 BTMP Study Area**

To effectively identify transportation priorities in the three regions along the Texas-Mexico border, multiple planning analysis areas—referred to as spheres—were identified for the BTMP to assess different levels of detail and characteristics of the transportation network. These spheres were designed to show the connection between the Texas-Mexico multimodal transportation corridors—starting at the individual border crossings and expanding into the entire border region, as well as transportation networks in Texas, the U.S., and Mexico. **Figure 1.2-1** shows the limits of the three border regions in Sphere 3.

The five spheres used to develop the BTMP are shown below and are further explained in **Chapter 4**.

- **Sphere 1**: 60 miles (100 kilometers [km]) north and south of the border
- **Sphere 2**: Approximately 100 miles (160 km) north and south of the border representing key population and production centers
- **Sphere 3**: Five border states (Texas, Chihuahua, Coahuila, Nuevo León, and Tamaulipas)
- **Sphere 4**: U.S. and Mexico
- **Sphere 5**: U.S., Mexico, and Canada (NAFTA/USMCA)
1.3 BTMP Development Process

The development of the BTMP is data-driven and also relies on extensive consultation and consensus-building with binational stakeholders. The BTMP development process is shown in Figure 1.3-1.

Figure 1.3-1. BTMP Development Process
The development of the BTMP was informed by a wide variety of binational stakeholder groups. Details regarding the stakeholder engagement framework and the participation of these groups in the development of the BTMP are provided in Chapter 9. The key groups that participated in the development of the plan are:

- Border Trade Advisory Committee (BTAC)
- Binational Regional Steering Committees (BNRSCs)
- TxDOT's Internal Border Task Force
- Binational private and public sector through Stakeholder Workshops, surveys, and interviews
- General public through public meetings

1.4 Organization of the BTMP

The BTMP consists of the 11 chapters listed in Table 1.4-1.

<table>
<thead>
<tr>
<th>Chapter Name</th>
<th>Chapter Overview</th>
</tr>
</thead>
</table>
| Chapter 1 Introduction | - Background  
- Purpose and development of the BTMP  
- Organization of the BTMP |
| Chapter 2 Goals, Objectives, and Institutions | - Vision and mission of the BTMP  
- Goals and objectives of the BTMP  
- Institutions and overview of planning and implementation processes |
| Chapter 3 Texas-Mexico Border: Past and Present | - Trends and current conditions on population, employment, income, education, movement of people and goods, and trade  
- Texas-Mexico border infrastructure history  
- Key elements of the multimodal networks and performance |
| Chapter 4 Texas-Mexico Multimodal Transportation Network Designation | - BTMP regions and spheres of influence  
- Criteria and process for multimodal corridor designations  
- Final multimodal transportation network |
| Chapter 5 Current and Future Needs Assessment | - Current and future cross-cutting issues and needs  
- Current and future process-related issues and needs  
- Current and future performance-related issues and needs |
| Chapter 6 Future Forecasts for the Texas-Mexico Border Region | - Future scenarios  
- Forecast for the movement of people and goods |
| Chapter 7 Economic Importance of the Texas-Mexico Border | - Economic impact from movement of people and goods  
- Economic cost of border crossing times |
| Chapter 8 Process to Identify and Evaluate Strategies to Address Current and Future Needs | - Identification of strategies to meet current and future needs  
- Processes and criteria to evaluate strategies  
- Process and criteria to develop implementation plan |
| Chapter 9 Stakeholder Engagement | - Purpose  
- Organization and membership  
- Engagement summary |
| Chapter 10 Recommendations | - Evaluation summary  
- Project, policy, and program recommendations |
| Chapter 11 Implementation Plan | - Implementation plan for programs and projects  
- Funding status |
Chapter 2
Goals, Objectives, and Institutions
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Chapter 2  Goals, Objectives, and Institutions

This chapter outlines the vision and mission, as well as the goals and objectives of the Texas-Mexico Border Transportation Master Plan (BTMP). This chapter also describes the institutions and agencies that facilitate the safe and efficient movement of people and goods across the Texas-Mexico border. These institutions and agencies are responsible for setting policies and managing, operating, planning, implementing, and overseeing binational collaboration and cooperation across the Texas-Mexico border. They played a key role in the development of the BTMP. They are also integral in implementing and achieving the goals, objectives, and recommendations of the BTMP.

2.1 Vision and Mission of the BTMP

The BTMP lays out the vision, mission, goals and objectives outlined below.

**Vision**

To collaboratively foster integrated and efficient Texas-Mexico transportation mobility of people and goods across the Texas-Mexico border and to promote economic development that benefits the binational Texas-Mexico border region and the United States and Mexico.

**Mission**

To develop and implement a trade, economic development, and transportation strategy and public policy that facilitates U.S.-Mexico border trade and cross-border movement of people, creates efficient corridors, and enhances the connections in the Texas-Mexico border region, within the U.S. and Mexican states that form the Texas-Mexico border region, and between the two nations that share this border.

2.2 Goals and Objectives of the BTMP

The goals and objectives of the BTMP (Table 2.2-1) provide strategic direction on how to identify and address the multimodal transportation system and infrastructure needs of the Texas-Mexico border region. In particular:

- The goals represent aspirational areas on which the BTMP should focus.
- The objectives represent specific, measurable priorities for the BTMP.
Table 2.2-1. BTMP Goals and Objectives

<table>
<thead>
<tr>
<th>Category</th>
<th>Goal</th>
<th>Objectives</th>
</tr>
</thead>
</table>
| Mobility and Reliability | Address congestion and improve system efficiency and performance on the Texas-Mexico transportation system | • Improve cross-border travel time reliability for greater efficiency of cross-border movement of people and goods.  
• Improve the capacity of the multimodal transportation system to accommodate future growth in movement of people and goods. |
| Economic Competitiveness | Align investments in cross-border transportation infrastructure to support economic competitiveness, productivity, and development in the border regions and beyond | • Support gross domestic product (GDP) growth and economic growth in the border regions and the states.  
• Support job creation and retention in the border regions and the states.  
• Support continued growth in trade value in the border regions and the states. |
| Safety and Security | Address Texas-Mexico multimodal transportation safety and security | • Address the number of crashes on the Texas-Mexico transportation system that result in fatalities and injuries, including those at ports of entry.  
• Enhance the secure movement of people and goods. |
| Connectivity | Provide Texas-Mexico transportation options and improved system connectivity for all modes | • Improve first- and last-mile connectivity for seamless movement of people and goods.  
• Provide for multimodal options for the cross-border movement of people and goods. |
| Cross-Border Resiliency | Maintain system capacity to facilitate continued operations after disruptions and emergency events | • Provide for the safe and expeditious evacuation of people from the area in the event of a disaster.  
• Improve redundancy of the Texas-Mexico transportation system. |
| Sustainable Funding | Identify sustainable funding sources for the Texas-Mexico border transportation system | • Identify funding for the Texas-Mexico transportation system.  
• Leverage alternative funding sources to pay for improvements to the Texas-Mexico transportation system.  
• Identify multimodal cost-benefit impact to infrastructure improvements to optimize investment. |
| Customer Service | Engage stakeholders and incorporate their feedback in decision-making processes | • Improve the provision and distribution of information to users about the border.  
• Actively solicit and incorporate customer feedback in Texas-Mexico transportation planning processes.  
• Educate government agencies and related officials in the U.S. and Mexico about the border environment and the roles and responsibilities of the different agencies facilitating Texas-Mexico trade and travel. |
## Goals, Objectives, and Institutions

<table>
<thead>
<tr>
<th>Asset Preservation</th>
<th>Goal</th>
<th>Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maintain and preserve cross-border region transportation infrastructure that supports movement of people and goods</td>
<td>Provide for infrastructure related to the cross-border movement of people and goods being maintained in a state of good repair.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Stewardship and Sustainability</th>
<th>Consider environmental and community impacts in cross-border investment and decision-making</th>
<th>Improve Texas-Mexico coordination of infrastructure development.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Consider environmental and community impacts and opportunities through improvements to the multimodal Texas-Mexico transportation system.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Inform and engage the public about environmental and investment decisions related to the Texas-Mexico transportation system.</td>
</tr>
</tbody>
</table>

The goals and objectives of the BTMP align with the priorities listed in planning documents in both the U.S. and Mexico.

In particular, they align with the previous U.S.-Mexico border master plans (BMPs), transportation and mobility plans on the U.S. side and with the transportation and mobility plans on the Mexican side, as shown in Figure 2.2-1.

Figure 2.2-1. Alignment of BTMP Goals and Objectives with Existing Plans in the U.S. and Mexico
The goals and objectives serve as the foundation for identifying needs and for evaluating policies, programs, and projects.

The identification of needs is presented in Chapter 5, and the approach to identifying and evaluating strategies is presented in Chapter 8.

Multiple stakeholders, including institutions and agencies across all levels of government and the private sector, collaborate to facilitate the movement of people and goods across the Texas-Mexico border. The three key activities performed by these stakeholders are developing policies, planning for and implementing infrastructure improvements, and managing and operating the border crossings and transportation system.¹

The next section provides details about the processes to develop policies, programs, and projects, and manage the U.S.-Mexico and Texas-Mexico borders.

2.3 U.S.-Mexico and Texas-Mexico Borders: Policy Development, Planning and Infrastructure Development, and Management Processes

Prior to September 11, 2001 terrorist events, Mexico primarily took a hands-off approach in managing its northern border, with nearly no entry processing required for most of the southbound travelers and a limited law-enforcement focus on the border. After September 11, 2001 events, the U.S. and Mexico increased their level of collaboration, establishing a series of high-level forums and mechanisms to discuss and address issues related to the border. Among others, the two countries have partnered in the following initiatives:

- Creation of the Executive Steering Committee (with top-level leadership from both governments) and related binational committees for various aspects of border management in 2010 as part of the 21st Century Border initiative
- Creation of the U.S-Mexico High Level Economic Dialogue in 2013

The movement of people and goods across the U.S.-Mexico border is shaped by policy and planning, but the user experience is related to the efficiency of operations at the border crossings.²

The institutions and agencies that facilitate the efficient and safe movement of people and goods across the Texas-Mexico border set policies and plans and manage infrastructure and operations at the border through binational collaboration and cooperation. The processes to develop and implement policies and plans by the institutions involved, as well as the characteristics of the management, operations, program, and project implementation at the border are described below. This includes the binational coordination of activities to make the border work effectively on a daily basis and to prepare for major disruptive events. The institutions identified below are responsible for

¹ Even though the purpose of this chapter is to describe binational stakeholder roles, this information was used to inform the outcome of the BTMP, consisting of policy, program, and project recommendations.

² The term user experience denotes the overall experience by border crossing users while traveling across the U.S.-Mexico border, particularly in terms of how easy and expedited their crossings are.
implementing actions to attain the goals and objectives of the BTMP; therefore, their role in the success of the BTMP is vital.

2.3.1 Overview of Policy Development along the U.S.-Mexico Border and the Texas-Mexico Border

The development of policies that impact the U.S.-Mexico border follows a hierarchical relation, reflecting the binational nature of the relationship. Federal agencies in both countries oversee the overarching policies that impact the border crossings. States and local agencies have a more limited role, primarily supporting the implementation of federal-level policies.

An analysis of the development of policies for the Texas-Mexico border begins with a description of how policies are developed at the federal level, then identifies how those policies impact the Texas-Mexico border and how state and local agencies on the two sides of the border complement and support the implementation of these federal policies.

**Federal Level.** Binational relations between the U.S. and Mexico are overseen by the U.S. Department of State (DOS) on the U.S. side and by the Secretaría de Relaciones Exteriores (SRE) on the Mexican side. These two federal agencies are in charge of implementing foreign policies, which need to be approved by each country’s federal Congress. Specific foreign policies at the national level that impact the U.S.-Mexico border, including the Texas-Mexico border, include:

- **Trade policy:** regulating the trade relations between the two countries, including free-trade agreements. Historically the North American Free Trade Agreement (NAFTA) and now the U.S.-Mexico-Canada Agreement (USMCA)
- **Immigration policy:** regulating the legal entry of foreigners into a country
- **Labor policy:** regulating the employment of foreign workers
- **Infrastructure policy:** permitting the construction of infrastructure that connects countries
- **Security policy:** regulating the secure movement of people and goods between countries
- **Transportation policy:** regulating the transportation systems that connect countries
- **Incident response to environmental emergencies:** coordinating the response to environmental incidents and disasters occurring in neighboring countries

The federal agencies supporting the development and implementation of these binational policies are identified in Table 2.3-1.

Domestic policy initiatives, not meant to be applied at the binational level, can affect the movement of people and goods between the countries. These domestic initiatives are presented to Congress for approval by other federal agencies in each country.\(^3\) Domestic policies that affect the U.S.-Mexico border region must be implemented through binational mechanisms such as those presented in Section 2.3.2.

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\(^3\) These include limits on vehicle weights for commercial vehicles in each country.
Although these federal-level policies provide the overarching regulations for the Texas-Mexico border, state and local agencies also play a significant role in developing policies that influence the movement of people and goods across this border.
**State Level.** The role of the states on both sides of the Texas-Mexico border includes supporting the implementation of the policies developed at the federal level. They also develop and implement policies that impact the cross-border movement of people and goods. Policies issued at the state level cannot contradict similar policies issued at the federal level.

On the Texas side, the Texas Secretary of State serves as a senior advisor, as the Governor’s Liaison for Texas Border and Mexican Affairs, and as Chief International Protocol Officer for Texas. The Texas State Legislature oversees transportation policy issues in coordination with the Texas Transportation Commission and the Texas Department of Transportation.

On the Mexican side, the congresses of the states bordering Texas are responsible for statewide policy issues including those related to the border, with the help of agencies such as the Secretariats for Economic Development, Trade, or Public Works.

The state agencies involved in development of policies that affect the border are presented in Table 2.3-2.

**Local Level.** The role of local agencies on both sides of the Texas-Mexico border includes supporting the implementation of policies developed at the federal and state levels. These local agencies also can identify, suggest, and/or recommend policies to state or federal agencies for their implementation. They develop plans or protocols for their local departments, such as fire or law enforcement, to actively support border-crossing operations or to respond to incidents, emergencies, or disasters occurring at or near the border crossings.

Given the hierarchical nature of developing policy for the Texas-Mexico border, there is constant and continuous communication and coordination, not only at the federal levels of the two countries, but also among the state and local levels within each country. For the BTMP, there is a need for additional joint management initiatives to effectively align the priorities of the different stakeholders and develop policies that address the evolving nature of the border.

By understanding policymaking on both sides of the Texas-Mexico border and reconciling differences, the development and implementation of new policies can be harmonized. High-level, binational coordination groups are instrumental in achieving this alignment in transportation policy development.

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4 The Secretary of State also serves as the chair of the Border Trade Advisory Committee, which acts as a forum for agency transportation decisions affecting trade and the movement of freight at the Texas border, and leads the Interagency Workgroup on Border Issues, a roundtable to develop a profile of border and cross-border activities, initiatives and policies.

5 Some local agencies across the Texas-Mexico border are taking an active role in organizing the response of the border-crossing stakeholders to the COVID-19 pandemic.
2.3.2 Overview of Transportation Planning Processes along the Texas-Mexico Border

The U.S. and Mexican governments have worked actively to improve and expand numerous mechanisms for creating a cross-border transportation infrastructure that is modern, safe, and facilitates efficient flows of people and trade. The two key mechanisms to achieve these objectives are the following:

- **U.S.-Mexico Joint Working Committee on Transportation Planning (JWC):** Created in 1994, this binational group’s main purpose is to foster collaboration and cooperation between U.S. and Mexico on land transportation planning and the facilitation of efficient, safe, and economical cross-border movement of people and goods.

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6. Most of the agencies listed in Texas under this category participate in the State’s approval process for the construction of bridges over the Rio Grande River.
Membership includes transportation professionals from the U.S. Federal Highway Administration (FHWA) and SCT. The JWC also includes representatives from DOS, SRE, the four U.S. border state Departments of Transportation (DOTs), and the six Mexican border states. GSA and CBP also participate in JWC meetings. The JWC members play a key role in developing border master plans.

- **U.S.-Mexico Binational Bridges and Border Crossings Group (BBBXG):** Established in 1981, this binational group’s main purpose is to facilitate collaboration and cooperation on operational matters involving existing and proposed international bridges and border crossings and their related infrastructure, as well as exchanges of technical information and the discussion of policy issues.

  - Membership includes delegates from the U.S. and Mexican governments, as well as participation from the 10 U.S. and Mexican border states, including California, Arizona, Texas, and New Mexico in the U.S., and Baja California, Sonora, Chihuahua, Coahuila, Nuevo León, and Tamaulipas in Mexico. This group meets twice a year to discuss ways to improve the efficiency of existing crossings and coordinate planning for new ones.

These two binational groups provide the framework for the U.S.-Mexico border transportation planning process and guide border transportation management and investment decisions, as discussed in **Chapter 10**. Also, these groups discuss the timeframes for implementing policies, programs, and projects, as discussed in **Chapter 11**.

**Planning for the Construction of New Border Crossings or Changes to Existing Ones.** JWC and BBBXG provide a platform for discussions on planning for and constructing new border crossings. Both countries need to coordinate the complexities that a new crossing involves, including a U.S. Presidential Permit (for bridges built after 19727) and U.S. Coast Guard approval (for bridges that span international waters like the Rio Grande) on the U.S. side, as well as approvals from the Mexican state and federal governments (through the Inter-Sectorial Group for Bridges and International Crossings) and, when needed, approvals from IBWC/CILA (for bridges that span across international waters).8 The proposed new border crossing must be presented to BBBXG to assess its binational feasibility and to establish a formal, diplomatic dialogue between the two countries regarding the project. A brief summary of the permitting process in each country is provided below.

**U.S. Permits.** The key requirement for the construction of a new border crossing or for changes to existing approved facilities along the U.S.-Mexico border is the Presidential Permit.9 Under Executive Order 13867 dated April 10, 2019, the Secretary of State has been designated to receive all applications for issuing or amending Presidential Permits for constructing, connecting, operating, or maintaining the international boundaries of the U.S. for certain cross-border projects, including land border crossings with Mexico. After reviewing an application, the U.S. Secretary of State provides an opinion to the President regarding whether the issuance or amendment serves the foreign policy interests of the U.S. Any

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7 Prior to the International Bridges Act of 1972, approval to construct an international bridge was granted by individual Acts of Congress.

8 The International Boundary and Water Commission (IBWC)/Comisión Internacional de Límites de Aguas (CILA) is another binational group that meets regularly to define border crossings.

9 There are other approvals needed on the U.S. side such as the U.S. Coast Guard approval and the IBWC approval. These are not discussed in this document since they are not applicable to all border crossings.
decision to issue, deny, or amend a permit is made solely by the President of the United States.\textsuperscript{10}

In addition to the federal approval process, there is also a State of Texas approval process for a Presidential Permit for international bridges in Texas. The State of Texas, through TxDOT, has codified the process and requirements for approving the financing and construction of transportation projects on international bridges over the Rio Grande River. The Texas Transportation Code, Section 201.612, states that a political subdivision or private entity authorized to construct or finance the construction of a bridge over the Rio Grande River must obtain approval from both the Texas Transportation Commission and the U.S. government. The Texas Transportation Code directs TxDOT to allow an applicant to concurrently seek approval from the Commission and the U.S. federal government.

To obtain the Commission’s approval for a project, the political subdivision or private entity must submit an application directly to TxDOT for consideration. Factors that are considered by the Commission include the local sponsor’s financial resources, whether the bridge is consistent with the state and regional transportation plans, and the bridge’s potential effect on the economy of the region, the environment, traffic congestion, and the free flow of trade.

**Mexico Permits.** Approvals for a new border crossing or significant changes to an existing facility fall under SRE’s jurisdiction through its Undersecretariat for North America. Proposals for new and improved facilities are reviewed and considered by the Inter-Sectorial Group for Bridges and International Crossings. The group includes SAT, INM, SENASICA, INDAABIN, and SCT among other agencies, but it is headed by SRE. The group is also tasked with coordinating with state and local agencies regarding new border facilities, procurement processes, and administration. Proposals for new facilities must be approved by the group before they can be elevated to binational groups.

**Border Planning Process**

Border planning and infrastructure development along the U.S.-Mexico border can be divided into two categories: inside the border crossings and outside the border crossings. Inside the border crossings, the focus of the planning process is on identifying the infrastructure and systems required to effectively process and move people and goods between the two countries. Outside the border crossings, the emphasis is on identifying the transportation infrastructure to improve the connectivity of the border crossings with wider transportation networks.

Border master plans are documents that help identify needs inside and outside border crossings and prepare for them. They are defined and supported by JWC to promote and coordinate infrastructure development along the U.S.-Mexico border. Under its guidelines, these comprehensive, binational long-range plans should help:

- Inventory transportation and port of entry (POE) infrastructure that facilitates trade
- Prioritize and promote planned POEs and related transportation projects
- Support decision-making
- Allocate limited funding resources

\textsuperscript{10} Under Executive Order 13867 of April 10, 2019.
Support continued dialogue and coordination on future POEs and support transportation infrastructure needs and projects

The development of the BTMP followed planning and programming processes established in the U.S. and Mexico. An overview of the specific processes followed in each country is provided below.

**U.S. Planning Process**

In the U.S., federal agencies are in charge of leading the planning process inside and outside the border crossings. Inside the border crossings, CBP is the leading planning agency. Outside the border crossings, USDOT issues guidance to the state DOTs regarding how to develop their transportation plans.

An overview of the U.S. border planning process is shown in Figure 2.3-1. The process involves federal and state agencies, as described below.

**Figure 2.3-1. Overview of U.S. Border Planning Process**

*Federal*

Inside the border crossings, CBP develops a 5-year planning document for land POE capital investments. This plan covers infrastructure planning efforts for the entire U.S.-Mexico border, including the Texas-Mexico border. Prioritized border crossing projects are forwarded to GSA for funding consideration. For each project, an Operational Requirements Document defining operational needs for the project is developed by CBP with input from GSA and other project stakeholders. This document is then used in the initial project development stage of GSA’s capital project delivery process. Once in receipt of the list of prioritized projects and their respective Operational Requirements Documents, the GSA regional team responsible for the project’s execution assembles a project development team and begins the preliminary work necessary to launch the project’s Feasibility Study. In the capital project funding process, the Feasibility Study is followed by a request for project design funding, then construction funding in the following fiscal year.

Outside the border crossings, federal oversight is provided by USDOT on transportation planning processes, as defined in the latest transportation legislation, referred to as the Fixing America’s Surface Transportation (FAST) Act of 2015. This act includes guidance to state DOTs regarding how to prepare their statewide long-range transportation plan (SLRTP) and the metropolitan planning organizations (MPOs) to prepare metropolitan transportation plans. The FAST Act also provides
guidance to state DOTs and MPOs to develop state and regional transportation plans, such as the freight and rail plans. This federal guidance provides flexibility for all state DOTs and MPOs to prepare SLRTPs and metropolitan transportation plans that reflect the unique transportation system characteristics, mode, needs and deficiencies, performance-based planning and analysis, engagement of the public and private stakeholders, and funding and financing in their states and/or regions.

Texas

**Strategic Plan.** Although not a requirement under the FAST Act, the TxDOT Strategic Plan, prepared every 4 years, is used by the agency to guide the strategic direction of the department and its overall operations, direction, performance, and future expectations. The TxDOT Strategic Plan is also used to guide the development of the Texas Transportation Plan (TTP), which is the state’s long-range transportation plan, and other statewide system plans such as the Texas Freight Mobility Plan and Texas Rail Plan, among others. The Strategic Plan is used to maintain consistency with the vision, goals, objectives, performance expectations, planning analysis, and financial expectations for the state’s multimodal transportation system.

**Texas Transportation Plan.** This TxDOT planning document meets the FAST Act requirement for statewide long-range transportation planning. The Texas Transportation Plan 2050 (TTP 2050) is used by TxDOT to guide planning and programming decisions for developing, integrating, and operating the state transportation system. This BTMP was developed by TxDOT to provide a detailed, critical, and prioritized list of border-crossing projects, policies, programs, and funding strategies to support the TTP 2050.

**Unified Transportation Program.** The Unified Transportation Program is TxDOT’s 10-year programming document to authorize and guide transportation project development and construction on Texas’ intermodal transportation network. It is updated, and adopted by the Texas Transportation Commission, annually.

**Statewide Transportation Improvement Program.** The Statewide Transportation Improvement Program (STIP), prepared every 4 years and updated every 2 years, includes outcomes from both statewide and regional plans such as TTPs, metropolitan transportation plans, and transportation improvement programs (TIPs) and defines capital projects for short-term implementation (4-year cycles). This process is designed to meet the state’s long-range transportation trends, performance expectations and targets, improvement strategies, and investment priorities to develop the long-range transportation investment and implementation program.

**State System Plans.** State system plans, also prepared in 4- or 5-year cycles and required to be prepared by state DOTs under the FAST Act, represent the different systems that make up the multimodal statewide transportation system. In Texas, these include the Texas Freight Mobility Plan and Texas Rail Plan, among others. These system plans are used to inform the TTP with detailed information about the specific modes and systems.

**MPO Metropolitan Transportation Plans.** Metropolitan transportation plans are prepared by the 25 MPOs in Texas on a 5-year planning cycle and also follow FAST Act federal guidance and requirements, similar to those identified for state planning. In large part, this regional planning process is conducted by the MPOs independently from TxDOT’s TTP planning process and is used to

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11 The STIP is made up of 25 metropolitan and 3 rural TIPs.
identify the region’s potential transportation future. The MPOs coordinate with TxDOT on the development of their regional transportation plans to ensure consistency, resource sharing, and direction. In addition, the outcomes of these regional plans are used to inform the SLRTP, STIP, MPO TIPs, system plans (for example, the Texas Freight Mobility Plan and Texas Rail Plan), and associated documents and processes listed above as being developed by TxDOT.

**Mexico Planning Process**

In Mexico, federal agencies are also in charge of leading the planning process inside and outside the border crossings. The planning process in Mexico is federally based, meaning that plans provide overarching, nationwide direction for all planning efforts.

Mexico’s national planning system was established in the “General Planning Law” (Ley General de Planeación) issued on January 5, 1983, which established the following:

- Norms and principles (including the Plan Nacional de Desarrollo, or National Development Plan)
- Basis for integration and functioning (National System of Democratic Planning)
- Basis of participation and coordination

An overview of Mexico’s border planning process is shown in Figure 2.3-2. This process is federally centered, and the majority of the financial resources for transportation investments in the country are executed through federal agencies.

![Figure 2.3-2. Overview of Mexico Border Planning Process](image)

The National Development Plan is a six-year plan that guides the infrastructure plans of the current Presidential term. This planning document is applicable to the entire nation and provides the infrastructure priorities for the country. Inside the border crossings, the Secretaría de Hacienda y Crédito Público—Administración General de Aduanas (Aduanas) and SCT coordinate closely on
planning matters.\textsuperscript{12} Outside the border crossings, SCT is in charge of transportation infrastructure planning through its sectorial plan.

The \textit{National Development Plan} describes the type of programs that should be developed under each administration to provide more clarity to different aspects of the government work programs, including sectorial plans (for key federal agencies), institutional (for quasigovernmental agencies), regional, and special. At a minimum, a set of goals, objectives, strategies, feasibility criteria, coordination, and evaluation is developed as part of the \textit{National Development Plan}.

One of the key sectorial plans affecting the Texas-Mexico border and identified in Mexico’s \textit{National Development Plan} is the \textit{Sectorial Plan for Transportation and Communications}. This document is produced by SCT and includes the strategies, tactics, and investments to address transportation issues in Mexico that are anticipated to be implemented during the remainder of an administration’s time in office. The plan includes new international bridges and initiatives connecting the border crossings to the national transportation networks.\textsuperscript{13}

Another plan of relevance to the Texas-Mexico border is the \textit{Infrastructure Modernization Plan} for Aduanas. This plan identifies the future programs and projects to be implemented by this agency inside the border crossings.

\section*{2.3.3 Institutions and Agencies Involved in the Movement of People and Goods across the Texas-Mexico Border}

The planning, development, financing, management, and operation of transportation at and along the U.S. and Texas-Mexico border is a complex undertaking that involves close bilateral collaboration, cooperation, and communication among more than 50 binational public-sector agencies and numerous private-sector stakeholders.

The institutions and agencies that are key to the cross-border movement of people and goods between Texas and Mexico are listed in \textit{Table 2.3-3} through \textit{Table 2.3-7}. The list expands upon the strategic federal, state, and local agencies identified in \textbf{Sections 2.3.1 and 2.3.2} to include the private sector; associations; and community and other groups in both the U.S. and Mexico. Each of these institutions has been an active participant in developing the goals and objectives of the BTMP.

\textit{Table 2.3-3} lists the federal agencies on both countries that are key to the cross-border movement of people and goods between Texas and Mexico.

\textsuperscript{12} The responsibility of Aduanas is to plan for supporting infrastructure and systems, while the responsibility of SCT is to plan for international bridge infrastructure and the connectivity of border crossings to the local networks.

\textsuperscript{13} As part of the current administration’s planning efforts, a National Agreement of Investment in Infrastructure was developed by the federal government in conjunction with the private sector. This agreement represents the commitment of the private sector to invest in infrastructure in Mexico. The agreement lists 101 transportation projects, including tolled highways connecting to the Texas-Mexico border and new border crossings.
### Table 2.3-3. Federal Agency Stakeholders

<table>
<thead>
<tr>
<th>Federal Agencies</th>
<th>U.S.</th>
<th>Federal Agencies</th>
<th>Mexico</th>
</tr>
</thead>
<tbody>
<tr>
<td>Department of Transportation—Federal Highway Administration (FHWA)</td>
<td></td>
<td>Secretaría de Comunicaciones y Transportes (SCT)</td>
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<tr>
<td>Department of Transportation—Federal Motor Carrier Safety Administration (FMCSA)</td>
<td></td>
<td>Secretaría de Comunicaciones y Transportes—Instituto Mexicano del Transporte (IMT)</td>
<td></td>
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<tr>
<td>Department of Homeland Security—Customs and Border Protection (CBP)</td>
<td></td>
<td>Secretaría de Relaciones Exteriores (SRE)</td>
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</tr>
<tr>
<td>General Services Administration (GSA)</td>
<td></td>
<td>Secretaría de Hacienda y Crédito Público—Administración General de Aduanas (Aduanas)</td>
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<tr>
<td>Food and Drug Administration (FDA)</td>
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<td>Secretaría de Gobernación—Instituto Nacional de Migración (INM)</td>
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<tr>
<td>Trade Development Agency (USTDA)</td>
<td></td>
<td>Secretaría de Comunicaciones y Transportes—Caminos y Puentes Federales (CAPUFE)</td>
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<tr>
<td>Department of State (DOS)</td>
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<td>Secretaría de Hacienda y Crédito Público—Instituto de Administración de Avalúos de Bienes Nacionales (INDAABIN)</td>
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<tr>
<td>International Boundary and Water Commission (IBWC)</td>
<td></td>
<td>Comisión Internacional de Límites y Aguas entre México y Estados Unidos (CILA)</td>
<td></td>
</tr>
<tr>
<td>Department of Transportation—Federal Railroad Administration (FRA)</td>
<td></td>
<td>Secretaría de Bienestar (BIENESTAR)</td>
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<tr>
<td>Pipeline and Hazardous Materials Safety Administration (PHMSA)</td>
<td></td>
<td>Instituto Nacional de Estadística y Geografía (INEGI)</td>
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<td>U.S. Department of Agriculture (USDA)</td>
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<td>Secretaría de Energía (SENER)</td>
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<tr>
<td>U.S. Army Corps of Engineers (USACE)</td>
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<td>Secretaría de Hacienda y Crédito Público—Servicio de Administración Tributaria (SAT)</td>
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<tr>
<td>Environmental Protection Agency (EPA)</td>
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<td>Secretaría de Economía (SE)</td>
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<td>U.S. Trade Representative (USTR)</td>
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<td>Secretaría de Seguridad y Protección Ciudadana (SEGURIDAD)</td>
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<td>Department of Commerce (DOC)</td>
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<td>Secretaría de Agricultura y Desarrollo Rural—Servicio Nacional de Sanidad, Inocuidad y Calidad Agroalimentaria (SENASICA)</td>
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<tr>
<td>Department of Justice (DOJ)</td>
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<td>Secretaría de Desarrollo Agrario, Territorial y Urbano (SEDATU)</td>
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<tr>
<td>Department of Homeland Security—Immigration and Customs Enforcement (ICE)</td>
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<td>Secretaría de la Defensa Nacional (SEDENA)</td>
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<tr>
<td>Department of Labor (DOL)</td>
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<td>Secretaría de Medio Ambiente y Recursos Naturales—Procuraduría Federal de Protección al Ambiente (PROFEPA)</td>
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<tr>
<td>Department of Homeland Security—Border Patrol (BP)</td>
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<td>Secretaría de Seguridad y Protección Ciudadana—Centro Nacional de Inteligencia (CNI)</td>
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<td>Secretaría de Gobernación (SEGOB)</td>
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<td>Secretaría del Trabajo y Previsión Social (TRABAJO)</td>
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<td></td>
<td></td>
<td>Banco Nacional de Obras y Servicios Públicos (BANOBRAS)</td>
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</table>
Table 2.3-4 lists the state agencies on both countries that make the cross-border movement of people and goods between Texas and Mexico possible.

<table>
<thead>
<tr>
<th>State Agencies</th>
<th>U.S.</th>
<th>State Agencies</th>
<th>Mexico</th>
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</thead>
<tbody>
<tr>
<td>Texas Governor and members of the Texas Legislature</td>
<td></td>
<td>Estado de Coahuila de Zaragoza</td>
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</tr>
<tr>
<td>New Mexico State Government – Representatives and Senators</td>
<td></td>
<td>Estado de Nuevo León</td>
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<tr>
<td>Texas Department of Transportation</td>
<td></td>
<td>Estado de Tamaulipas</td>
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<tr>
<td>New Mexico Department of Transportation</td>
<td></td>
<td>Estado de Chihuahua</td>
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<tr>
<td>Texas Department of Public Safety</td>
<td></td>
<td>Secretaría de Obras Públicas de Tamaulipas</td>
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<tr>
<td>New Mexico Department of Public Safety</td>
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<td>Secretaría de Economía y Turismo de Tamaulipas</td>
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<tr>
<td>New Mexico Border Authority</td>
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<td>Secretaría de Desarrollo Urbano y Medio Ambiente de Tamaulipas</td>
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<td>Texas Transportation Commission</td>
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<td>Secretaría de Obras Públicas y Transporte de Coahuila</td>
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<tr>
<td>Texas Railroad Commission</td>
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<td>Secretaría de Economía y Turismo Coahuila</td>
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<tr>
<td>Texas Secretary of State</td>
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<td>Secretaría de Economía y Trabajo de Nuevo León</td>
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<td>Texas Commission on Environmental Quality</td>
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<td>Secretaría de Desarrollo Sustentable de Nuevo León</td>
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<tr>
<td>Texas Department of Agriculture</td>
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<td>Corporación para el Desarrollo de la Zona Fronteriza de Nuevo León (CODEFRONT)</td>
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<td>Texas Historical Commission</td>
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<td>Secretaría de Comunicaciones y Obras Públicas Chihuahua</td>
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<td>Texas Alcoholic Beverage Commission</td>
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<td>Secretaría de Innovación y Desarrollo Económico de Chihuahua</td>
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<td>Texas Department of Economic Development</td>
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<td>Promotora de Industria Chihuahuense</td>
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<td>General Land Office of Texas</td>
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<td>State Congresses in border Mexican states</td>
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<tr>
<td>Attorney General of Texas</td>
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<td>Centro SCT in Mexican border states</td>
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<td>Texas Education Agency</td>
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<td>Fideicomiso de Puentes Fronterizos de Chihuahua</td>
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<td>Texas Health &amp; Human Services Commission</td>
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<td>Texas Higher Education Coordinating Board</td>
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<td>Texas Parks &amp; Wildlife Department</td>
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<tr>
<td>Texas Public Utility Commission</td>
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</table>
Table 2.3-5 identifies the local agencies on both countries that are key for the cross-border movement of people and goods between Texas and Mexico.

Table 2.3-5. Local Agency Stakeholders

<table>
<thead>
<tr>
<th>Local Agencies</th>
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<th>Local Agencies</th>
<th>Mexico</th>
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</thead>
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<td>Local Metropolitan Planning Organizations</td>
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<td>Municipios within the border regions</td>
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<tr>
<td>▪</td>
<td>Regional Mobility Authorities</td>
<td>▪</td>
<td>Institutos Municipales de Investigación, Planeación y/o Desarrollo Urbano from municipios within the border regions</td>
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<tr>
<td>▪</td>
<td>Local county and city governments within the border regions</td>
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</tr>
<tr>
<td>▪</td>
<td>Economic Development Corporations part of county and city governments within the border regions</td>
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<td></td>
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</tbody>
</table>

Table 2.3-6 identifies some of the private sector stakeholders on both countries that participate in the cross-border movement of people and goods between Texas and Mexico.

Table 2.3-6. Private Sector Stakeholders

<table>
<thead>
<tr>
<th>Private Sector</th>
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<th>Private Sector</th>
<th>Mexico</th>
</tr>
</thead>
<tbody>
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<td>Bridge owners (for some border crossings)</td>
<td>▪</td>
<td>Bridge owners (for some border crossings)</td>
</tr>
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<td>▪</td>
<td>U.S. trucking companies</td>
<td>▪</td>
<td>Mexican trucking companies</td>
</tr>
<tr>
<td>▪</td>
<td>U.S. railroad companies (Class I railroads and short lines)</td>
<td>▪</td>
<td>Mexican railroad companies</td>
</tr>
<tr>
<td>▪</td>
<td>U.S. airport operators</td>
<td>▪</td>
<td>Mexican airport owners</td>
</tr>
<tr>
<td>▪</td>
<td>U.S. seaport owners and terminal operators</td>
<td>▪</td>
<td>Mexican seaport owners (in joint venture with federal government) and terminal operators</td>
</tr>
<tr>
<td>▪</td>
<td>U.S. brokers and logistics companies</td>
<td>▪</td>
<td>Mexican brokers and logistics companies</td>
</tr>
<tr>
<td>▪</td>
<td>U.S. shippers</td>
<td>▪</td>
<td>Mexican shippers</td>
</tr>
<tr>
<td>▪</td>
<td>U.S. passenger bus companies</td>
<td>▪</td>
<td>Mexican passenger bus companies</td>
</tr>
<tr>
<td>▪</td>
<td>U.S. pipeline owners and operators</td>
<td>▪</td>
<td>Mexican pipeline owners and operators</td>
</tr>
</tbody>
</table>
Table 2.3-7 identifies some of the community groups, associations, and other groups on both countries with links to the cross-border movement of people and goods between Texas and Mexico.

<table>
<thead>
<tr>
<th>Community Groups, Associations, and Other Groups</th>
<th>U.S.</th>
<th>Community Groups, Associations, and Other Groups</th>
<th>Mexico</th>
</tr>
</thead>
<tbody>
<tr>
<td>• The Borderplex Alliance</td>
<td></td>
<td>• American Chamber of Commerce Mexico</td>
<td></td>
</tr>
<tr>
<td>• North American Strategy for Competitiveness</td>
<td></td>
<td>• Consejo Mexicano del Transporte (CMET)</td>
<td></td>
</tr>
<tr>
<td>(NASCO) Coalition</td>
<td></td>
<td>• Cámara Nacional de Aerotransportes (CANAERO)</td>
<td></td>
</tr>
<tr>
<td>• Border Trade Alliance</td>
<td></td>
<td>• Cámara Nacional del Autotransporte de Pasaje y</td>
<td></td>
</tr>
<tr>
<td>• El Paso Community Foundation</td>
<td></td>
<td>Turismo (CANAPAT)</td>
<td></td>
</tr>
<tr>
<td>• Border Industrial Association</td>
<td></td>
<td>• Asociación Mexicana de Ferrocarriles (AMF)</td>
<td></td>
</tr>
<tr>
<td>• Local and Regional Chambers of Commerce</td>
<td></td>
<td>• Cámara Nacional del Autotransporte de Carga</td>
<td></td>
</tr>
<tr>
<td>• Rio Grande Valley Partnership</td>
<td></td>
<td>(CANACAR)</td>
<td></td>
</tr>
<tr>
<td>• Non-profit or non-affiliated Economic Development Corporations in the border regions</td>
<td></td>
<td>• Asociación Mexicana de Ingeniería de Vías Terrestres (AMIVTAC)</td>
<td></td>
</tr>
<tr>
<td>• U.S. Chamber of Commerce in Mexico</td>
<td></td>
<td>• Asociación Nacional de Productores de Autobuses, Camiones y Tractocamiones (ANPACT)</td>
<td></td>
</tr>
<tr>
<td>• Texas Trucking Association</td>
<td></td>
<td>• Consejo Nacional de la Industria Maquiladora y</td>
<td></td>
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<tr>
<td>• Texas International Produce Association</td>
<td></td>
<td>Manufacturera de Exportación (INDEX)</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>• Consejo Empresarial Mexicano de Comercio</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Exterior, Inversión y Tecnología (COMCE)</td>
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<tr>
<td></td>
<td></td>
<td>• Clúster Electrodomésticos Nuevo León</td>
<td></td>
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<td></td>
<td></td>
<td>• Clúster Automotriz Nuevo León</td>
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<tr>
<td></td>
<td></td>
<td>• Cámara de la Industria de Transformación de</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Nuevo León (CAINTRA)</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>• Asociación Mexicana de la Industria Automotriz</td>
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<td></td>
<td></td>
<td>(AMIA)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Industria Nacional de Autopartes (INA)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Confederación de Cámaras Industriales (CONCAMIN)</td>
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<tr>
<td></td>
<td></td>
<td>• Asociación Nacional de Transporte Privado</td>
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<td></td>
<td></td>
<td>(ANTP)</td>
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<td></td>
<td></td>
<td>• Asociación de Agentes Aduanales de México</td>
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<td></td>
<td>• Consejo Nacional Agropecuario</td>
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<td></td>
<td>• Consejo Coordinador Empresarial</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>• Asociación Mexicana de Mensajería y Paquetería</td>
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</tr>
</tbody>
</table>
2.3.4 Overview of Management, Program, and Transportation Project Implementation along the U.S.-Mexico and Texas-Mexico Border

Implementation of key transportation infrastructure projects facilitates and supports the cross-border movement of people and goods through international border crossings and bridges.

The cross-border movement of people and goods is shaped by policy, planning, and programming. The operations and management inside the border crossing and the infrastructure immediately outside the border crossings affect the efficiency of those movements. The management, program and project development, and implementation of initiatives can be reviewed from three perspectives: border-crossing operations, border-crossing infrastructure and support facilities, and infrastructure linking the border crossing with the transportation networks in each country.

Inside the border crossings, operations are carried out by federal agencies from both countries, which are also responsible for implementing and funding border-crossing infrastructure programs and projects. The physical transportation infrastructure used to cross the border—bridges, dams, or ferries across the Rio Grande—are owned and operated by many entities including international, federal, state, local, as well as private. Outside the border crossings, state and local agencies are primarily responsible for planning, programming, constructing, maintaining, and operating the local transportation networks that link border crossings to the rest of the transportation system.

Table 2.3-8 briefly describes the entities responsible for the management of border-crossing operations, border-crossing infrastructure and support facilities, and infrastructure linking the border crossing with the transportation networks in each country. The table also provides a summary description of the responsibilities of each agency.

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14 The user experience is linked to several BTMP goals including mobility and reliability, safety and security, connectivity, and customer service.
<table>
<thead>
<tr>
<th>Aspect</th>
<th>Approach on U.S. Side</th>
<th>Approach on Mexico Side</th>
</tr>
</thead>
<tbody>
<tr>
<td>Border crossing management and operations</td>
<td>At the border crossing, the Office of Field Operations within CBP is the federal agency that manages the lawful access of people and goods into the U.S. At each one of the U.S. border crossings, CBP provides statutorily required immigration, customs, and agricultural inspection services that are required to conduct trade and travel. Other agencies also present at the border crossing facilities include USDA, which conducts agricultural inspections, and FMCSA, which conducts safety inspections of vehicles entering the U.S. CBP, as the agency leading border-crossing operations, has integrated the Resource Optimization Strategy at border crossings as a long-term strategy for improving border-crossing operations.</td>
<td>Aduanas is the federal agency in charge of supervising, controlling, and taxing the entry and exit of goods through the Mexican border crossings, as well as the transportation modes used to move these goods. Aduanas is the agency leading border-crossing operations on the Mexican side, and therefore most of the programs and projects at the border crossings are funded and implemented by it. However, a few of them might be implemented by other agencies or the private sector. Other agencies also present at the border crossing facilities include INM for immigration-related topics and CAPUFE to collect revenue on tolled border crossings.</td>
</tr>
<tr>
<td>Port of entry (POE) infrastructure and support facilities</td>
<td>The federal government, through GSA, is the owner of most of the infrastructure inside the border crossings. In most cases, the ownership and operation is shared with the cities or counties where the border crossing is located. In some cases, local jurisdictions build the infrastructure and lease it to GSA, or GSA leases the infrastructure to third parties such as the State of Texas, the county where the border crossing is located, or the private sector. Therefore, the responsibility for building and maintaining POE border-crossing infrastructure and support facilities falls primarily on GSA, though, in some cases, co-owners, operators, and lessees also share this responsibility.</td>
<td>The federal government through INDAABIN is the owner of most of the infrastructure inside the border crossings. In most cases, the ownership and operation are shared with other federal agencies like CAPUFE, state governments where the border crossing is located, or the private sector. The responsibility for building and maintaining border-crossing infrastructure and support facilities falls primarily on INDAABIN, though in most cases co-owners and operators also share this responsibility.</td>
</tr>
<tr>
<td>Infrastructure crossing the Rio Grande River</td>
<td>Crossings over the Rio Grande River are owned and operated by a number of different entities. These include the U.S. Section of the IBWC, State of Texas, local jurisdictions, or by private entities. Some bridge crossings are also operated by CBP and TxDOT.</td>
<td>The Rio Grande River crossings are typically owned by the federal government. Some are also owned by the Mexican Section of the IBWC (CILA) and private entities. Operations of the crossings are mainly undertaken by CAPUFE.</td>
</tr>
</tbody>
</table>

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15 CBP’s document is titled “Resource Optimization Strategy (ROS) at POEs,” where a POE (port of entry) is an administrative definition used by this agency that represents a collection of one or more border crossings.

16 Some of the border crossings are operated, on the Mexican side, by the private sector. At these border crossings, the responsibility to implement the programs and projects designed by Aduanas (and listed in the Infrastructure Modernization Plan) falls on them.

17 CBP also owns border crossings along the Texas-Mexico border.

18 CBP also owns border crossings along the Texas-Mexico border.
<table>
<thead>
<tr>
<th>Aspect</th>
<th>Approach on U.S. Side</th>
<th>Approach on Mexico Side</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Roadway</strong></td>
<td>Outside the border crossings, the responsibility for constructing and maintaining roadway infrastructure connecting the border crossings with the rest of the state falls on the department of transportation in that state. In Texas, the responsibility falls on TxDOT, which operates out of three border districts—El Paso, Laredo, and Pharr—as well as on local agencies.</td>
<td>Mexican municipalities and state governments are responsible for constructing and maintaining the roadway network outside the border crossings. Beyond urban areas, the Mexican states and the federal government (through SCT) are responsible for constructing and maintaining roadway assets linking population centers and other Mexican states. States and municipios have limited funding available to build or maintain new sections of highways, and therefore the federal government (through SCT) is the source of financing for this type of transportation infrastructure.</td>
</tr>
<tr>
<td><strong>Rail</strong></td>
<td>The construction and maintenance of rail infrastructure leading to and from the border crossings falls mainly on the private sector, primarily the Class I railroads. Three Class I railroads operate in Texas: BNSF Railway (BNSF), Kansas City Southern Railway (KCS), and Union Pacific Railroad (UP). Short lines are also responsible for certain segments of the rail network.</td>
<td>The construction and maintenance of rail infrastructure leading to and from the border crossings falls mainly on the federal government through SCT. Even though Ferromex and Kansas City Southern Mexico (KCSM) are private railroad companies operating near the Texas-Mexico border, they are not financially responsible for the improvements to the infrastructure over which they operate.</td>
</tr>
<tr>
<td><strong>Seaport</strong></td>
<td>Most of Texas’ commercial deep-water ports and shallow-draft commercial ports are operated by port authorities and navigation districts in Texas. Port authorities and navigational districts are political subdivisions formed to operate ports and other transportation infrastructure and therefore are responsible for constructing and maintaining this type of infrastructure. The private sector owns one deep-water seaport in Texas and is therefore responsible for its infrastructure.</td>
<td>Most of Mexico’s commercial ports are owned by the federal government through SCT, though the public-private partnership scheme has been popular in recent years through the creation of the Administración Portuaria Integral (API). APIs are a public-private joint venture in charge of planning, programming, and executing all necessary actions to operate and develop a seaport. The responsibility for constructing and maintaining seaport infrastructure falls on the federal government and its partners via the APIs.</td>
</tr>
</tbody>
</table>

19 In some cases, the federal government issues concessions for constructing, operating, and maintaining transportation assets, such as highways.

20 In some cases, the private sector may build and maintain rail infrastructure after reaching an agreement with SCT.

21 The Port of Texas City is the state’s only privately owned deep-water port.
The most common airport ownership involves traditional municipal or county governments, who are therefore responsible for constructing and maintaining the infrastructure at those airports.

The most common airport ownership in Mexico involves a traditional concession to the private sector known as an airport group, though some airports are owned and operated by the federal government (through SCT) or the state where it is located. As a result, the private sector is the main party responsible for building and maintaining infrastructure in Mexican airports, though the federal and state governments are also involved in those airports that are owned and operated by them.

Pipelines in Texas are privately owned, operated, and maintained by a variety of oil and gas companies. Therefore, the responsibility to build and maintain this infrastructure falls on the private sector.

Pipelines in Mexico are primarily owned by the federal government (through SENER), and therefore the responsibility to build and maintain this infrastructure falls mainly on the federal government. However, there are a few privately owned pipelines close to the Texas-Mexico border, and, in those cases, the responsibility to build and maintain infrastructure falls on the private sector. The energy reform introduced in Mexico over the last few years is anticipated to increase the participation of the private sector in constructing and operating pipelines in Mexico.

The funding sources for program and project implementation along the Texas-Mexico border, inside and outside the border crossings, are presented in Table 2.3-9.

<table>
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<td>Airport infrastructure</td>
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<td>Pipeline infrastructure</td>
<td>Pipelines in Texas are privately owned, operated, and maintained by a variety of oil and gas companies. Therefore, the responsibility to build and maintain this infrastructure falls on the private sector.</td>
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</tr>
</thead>
<tbody>
<tr>
<td>Border management and operations</td>
<td>At the border crossings, budget appropriations to GSA and CBP, as well as to the supporting agencies (such as USDA and FMCSA), allow the continued operation of these facilities.</td>
<td>At the border crossings, budget appropriations to Aduanas, as well as to the supporting agencies (such as INM and CAPUFE), allow the continued operation of these facilities.</td>
</tr>
<tr>
<td>POE infrastructure and support facilities</td>
<td>Budget appropriations to GSA and CBP allow these agencies to pay for the construction and maintenance of these facilities, though third parties such as the State of Texas, counties, cities, and the private sector might also contribute based on the ownership structure of a particular border crossing. Alternative sources of funding include the Donation Acceptance Program.</td>
<td>Budget appropriations to INDAABIN and Aduanas allow the construction and maintenance of some of these facilities, though third parties such as the states and the private sector are parties with major responsibilities based on the ownership structure of border crossings in Mexico.</td>
</tr>
</tbody>
</table>
## Border Crossing Processes and the User Experience

Users of border crossings along the U.S.-Mexico border attribute their crossing experience to the efficiency in the operation of the border crossings. This experience is directly related to the processes that need to be followed to allow the movement of people and goods between the two countries. A summary of those processes and the agencies involved in them is provided below.

**Processes for Movement of People (Passenger Vehicles, Pedestrians, and Bicyclists),** For northbound crossings (Figure 2.3-3):

- Travelers might pay tolls.\(^{23}\)
- Travelers must go through primary and sometimes secondary inspections.
- Individuals might also have to pay duties on their declared items.

For southbound crossings:

- The crossing process has only one Mexican Aduanas inspection station.
- Travelers may need to pay tolls.
- Traveler can be randomly selected for a secondary inspection.

\(^{22}\) An exception is the South Orient Line, which is owned by the State of Texas. This rail line crosses the Texas-Mexico border at Presidio, though at the time of writing the crossing is currently closed.

\(^{23}\) If applicable, tolls are paid to bridge owners and/or operators.
Processes for Movement of Goods (Commercial Vehicles [CMVs]). For northbound crossings (Figure 2.3-4) the process flows through three main potential physical inspection areas:

- Mexican export lot, for audit and interdiction.
- U.S. federal compound, for driver identification, shipment documentation, and inspection.
- U.S. state safety inspection facility, for compliance with U.S. safety standards and regulations.

For southbound CMV movements:

- The process has only one Aduanas inspection station in Mexico with a red-light/green-light decision, in which CMVs are randomly selected for a secondary inspection.
- Empty vehicles cross with no need to stop at an Aduanas booth.

Processes for Movement of Goods (Freight Rail). Rail border crossings along the Texas-Mexico border do not follow the same protocols and procedures due to the unique characteristics and challenges of each location. In general, each operating railroad works with CBP to perform their own operating
procedures to ensure trains coming into the U.S. or traveling to Mexico are safe and secure. Some characteristics of the crossing process include:

- CBP monitors freight rail cars crossing into U.S. borders by generally following three procedures: advanced targeting, R-VACIS, and secondary physical inspections. In some locations, CBP scans all southbound trains going into Mexico.
- Mexico’s border protection agency, Servicio de Administracion Tributaria (SAT), uses its own equipment to scan both incoming and outgoing trains.
- FRA conducts federal inspections of trains and their operations.
- Rail crews change in close proximity to the rail bridge.
- In some cases the train operator provides specific information electronically about the train to the railroad receiving it across the border.

In 2010, the U.S. and Mexico governments issued the Declaration of the 21st Century Border Initiative, which states, “a joint and collaborative administration of their common border is critical to transforming management of the border to enhance security and efficiency.” The actions outlined in this strategy suggest maintaining the close binational coordination between CBP and Aduanas, and leverage and expand several existing programs that have shown to foster the joint management of the border.

Texas-Mexico Border Joint Management Efforts

Many partners, both public and private, support, own, develop, finance, fund, operate, and maintain the multimodal transportation system that facilitates efficient and safe cross-border flows of people and goods in the Texas-Mexico border region. It requires joint management efforts, initiatives, and ongoing collaboration among the different agencies and stakeholders to make the border work effectively on a daily basis and to prepare it to respond to major disruptive events. This system is complex, multidimensional, dynamic, and extremely important to the U.S. and Mexican economies. The goals and objectives for this system must be unified among all the partners for this region to be successful.

The integrity of this multimodal border region transportation system relies on the communication, cooperation, coordination, and collaboration of these federal, state, and local jurisdictions and the private sector.

There are many parties responsible for the management and operation, program and project development, and implementation at the Texas-Mexico border, as well as differences between how these activities are approached in each country. Despite this, there is a strong willingness from all parties involved to cooperate to make the border work effectively on a daily basis. This willingness to cooperate is particularly true at the individual border-crossing level, where staff from local, state, and federal agencies work hand in hand to provide the services needed for the users of the border.

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An example of cooperation and communication among the different border stakeholders that has been working effectively is the El Paso Bridges Steering Committee.

This committee is dedicated to improving POEs in the El Paso/Santa Teresa/Chihuahua region and comprises more than 20 regulatory agencies, businesses, nonprofit organizations, and stakeholders from both sides of the border. The committee aims to streamline the border-crossing process for CMVs in a safe and secure manner. The border-crossing process for POVs and pedestrians will be addressed subsequently.

The committee focuses on achieving efficiency and consistency through identifying major obstacles and delivering consistent levels of quality to improve operations across projects. Participating agencies include, but are not limited to, the City of El Paso, El Paso County, El Paso MPO, CBP, TxDOT, the Consulate General of Mexico, the El Paso Community Foundation, the Borderplex Alliance, and more. The group meets regularly and has identified more than 50 projects that address challenges in the region’s POEs.

Resiliency Planning and Joint Incident Management and Emergency Response

Two areas in which binational collaboration plays a significant role are (1) resiliency planning and (2) incident management and emergency response at and around border crossings. These areas are directly related to the safety and security and the cross-border resiliency BTMP goals and have been brought to the forefront of discussions in light of the Coronavirus Disease 2019 (COVID-19) pandemic.

Resiliency Planning

Resiliency planning for the border is the responsibility of federal agencies on both sides of the border. On the U.S. side, border emergency management and international communication in case of unforeseen events is under the purview of the Department of Homeland Security (DHS) through several of its divisions including Cybersecurity and Infrastructure Security Agency (CISA), the Science and Technology Directorate (S&T), the Federal Emergency Management Agency (FEMA), and the Office of Emergency Communications (OEC).

CISA is tasked with protecting U.S. critical infrastructure. CISA’s responsibility is to coordinate and assist federal, state, local, and tribal agencies in preventing and addressing physical and cyber threats by providing them with the necessary information and tools.25 CISA also provides competitive grant programs for innovation or technology improvements related to governance, planning,

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25 [https://www.cisa.gov/](https://www.cisa.gov/)
coordination, and training along the border.\textsuperscript{26} For emergency communication needs along the southern border, CISA coordinates the activities of the Southwest Border Communications Working Group (SWBCWG), a local agency coordination group, and assists in limited cross-border communications coordination with Mexico through the U.S.-Mexico High-Level Consultative Commission on Telecommunications.\textsuperscript{27}

Initiatives to enhance technology deployment are spearheaded by S&T. From 2011 to 2017, S&T collaborated on the Canada-U.S. Enhanced (CAUSE) Resiliency experiment series, a five-event, scenario-based approach to simulate the use of interoperable and emerging technologies during cross-border emergencies. The experiment series was used to enhance cross-border emergency management capabilities in coordination with Canada by identifying improvements on situational awareness by sharing information, risk planning, alert and warning systems, and radio and wireless networks, as well as digital volunteer deployments.\textsuperscript{28} A similar effort has not been undertaken on the border with Mexico.

OEC’s responsibility is to collect and disseminate information, insights, and products from and to all DHS agencies on resiliency planning, emergency prevention, management, and communication in addition to supporting the development of tools, studies, and protocols for the use of emergency responders operating in border regions.

FEMA coordinates resiliency planning, preparedness, and response efforts with its international counterparts, supported by its Emergency Management Institute on the development and programming of international training courses, sessions, and workshops on planning for cross-border disasters such as flooding, tornadoes, and facility fires, among others.\textsuperscript{29}

Environmental contingencies are addressed and planned for through the partnership between EPA and the Secretaría del Medio Ambiente y Recursos Naturales (SEMARNAT) as established in the U.S.-Mexico Border 2020 Program and the 15 Sister Cities Binational Emergency Response Plans that have been produced for all border towns since 2008.\textsuperscript{30}

Emergency response and management in Mexico is under the purview of SEGOB through its Coordinación General de Protección Civil and the Sistema Nacional de Protección Civil (SINAPROC). They are both supported by research and tools developed at the Centro Nacional de Prevención de Desastres (CENAPRED). SINAPROC is tasked with coordinating with FEMA in preparedness and response training for local and state entities and is supported by the U.S. Agency for International Development (USAID) with resources to develop its capabilities.\textsuperscript{31}

However, international cooperation in the matter of emergency response has been centered around chemical hazards and law enforcement topics, while the full spectrum of binational cooperation still has ample room for improvement.

\textsuperscript{26} https://www.cisa.gov/border-interoperability-demonstration-project
\textsuperscript{27} https://www.cisa.gov/international-cross-border-emergency-communications-efforts
\textsuperscript{29} https://www.fema.gov/blog/2016-12-13/planning-cross-border-disasters
\textsuperscript{31} Estudio de la OCDE sobre el Sistema Nacional de Protección Civil en México. OCDE Publishing. 2013. Pages 198–203.
Joint Incident Management and Emergency Response

State and local agencies have a key role in responding to such incidents. Individual roles for these agencies depend on the type of roads that lead to and from the border crossings and the agencies’ jurisdictions for traffic operation. In most cities, even if the roads are state-maintained, they might be operated by the cities. In such cases, local law enforcement agencies respond to incidents around border crossings. Since most of the U.S.-Mexico border crossings are located in the middle of urban areas, in particular along the Texas-Mexico border where they are often downtown or in central business districts, local law enforcement agencies are much more involved during incident management.

The U.S.-Mexico Joint Contingency Plan for Preparedness for and Response to Environmental Emergencies in the Inland Border Area is the binational instrument that addresses emergencies caused by releases, spills, fires, or explosions of hazardous substances. This plan provides a binational coordination mechanism to ensure appropriate and effective cooperative planning, preparedness, and response measures between the U.S. and Mexico for environmental emergencies affecting the inland border area and to develop notification systems. This plan also identifies the Joint Response Team as the policy- and decision-making body with overall responsibility for the maintenance and effective implementation of the plan for both the U.S. and Mexico.

The Office of Emergency Management within the Office of Solid Waste and Emergency Response of the EPA is the coordinating authority for the U.S. for this Inland Border Plan. For Mexico, the coordinating authority for this plan is SEMARNAT through the Office of the Procuraduría Federal de Protección del Ambiente (PROFEPA), in partnership with the Coordinador General de Protección Civil, from SEGOB.

Under the auspice of the Joint Response Team, many cities along the U.S.-Mexico border have signed sister city agreements. As part of these agreements, border cities have developed contingency plans to respond to hazardous materials emergencies at and around border crossings. These plans are known as sister city contingency plans. The list of cities along the Texas-Mexico border that have such sister city contingency plans, and the date when they were signed, is provided below. Note that some of these plans were signed more than 20 years ago and most likely need to be updated due to the ever-changing conditions at the border.

- Presidio, Texas—Ojinaga, Chihuahua (signed 2004, updated 2013)
- Del Rio, Texas—Ciudad Acuña, Coahuila (signed 2001, updated 2013)
- Eagle Pass, Texas—Piedras Negras, Coahuila (signed 1998, updated 2013)
- Laredo, Texas—Nuevo Laredo, Tamaulipas (signed 1998)
- McAllen, Texas—Reynosa, Tamaulipas (signed 2000)
- Brownsville, Texas—Matamoros, Tamaulipas (signed 2002, pending final signatures by all parties)

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On the U.S. side, border cities, along with the counties, have formed emergency management offices and centers, which work closely with state and federal emergency agencies such as FEMA and EPA. The purpose of the emergency operation centers is to provide a location where multiple levels of government, agencies, and organizations can coordinate decisions, resources, and public information on a strategic level. Emergency management centers are also responsible for developing and implementing emergency plans, training, public outreach, and—most importantly—coordination of local, state, and federal officials while responding to major disasters.

2.4 Summary of Findings

This chapter outlines the vision, mission, and goals and objectives of the BTMP. It also describes the institutions and agencies that facilitate the efficient and safe movement of people and goods across the Texas-Mexico border. These organizations are responsible for setting policies and for planning, implementing, managing, and operating key infrastructure assets in addition to overseeing binational collaboration and cooperation across the Texas-Mexico border. These institutions, agencies, and stakeholders played a key role in the development of the BTMP. They will be responsible for implementing and achieving the goals, objectives, and recommendations of the BTMP.

The next chapter (Chapter 3) describes the socioeconomics, transportation infrastructure, and system performance in the Texas-Mexico border region and how it has changed over the past 20 years. This background serves as the basis for development of the BTMP.
Chapter 3

Texas-Mexico Border: Past and Present
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Chapter 3  Texas-Mexico Border: Past and Present

This chapter presents the history and current conditions of the Texas-Mexico border—including socioeconomics, transportation infrastructure, and system performance as a basis for the development of the Texas-Mexico Border Transportation Master Plan (BTMP). The Texas-Mexico border region is defined as 60 miles north and south of the border and is inclusive of three regions: El Paso/Santa Teresa/Chihuahua, Laredo/Coahuila/Nuevo León/Tamaulipas, and Rio Grande Valley/Tamaulipas.²

The data used in this chapter are 2019 values, unless otherwise noted. The BTMP analysis uses the baseline year of 2019 for technical analysis due to data availability for multiple metrics. Earlier years are used when 2019 data are unavailable. Historical data is provided back to 1990 or earliest year available, based on data source.

Texas and Mexico share a common border spanning 1,254 miles along the Rio Grande River. The border’s natural landscape and geography are unique across its three border regions.

Starting near El Paso and continuing to the Gulf of Mexico, the Texas-Mexico border anchors a diverse cultural, economic, and natural region unlike any other in North America.

The Texas-Mexico border traverses high desert, plains, and agricultural valleys to the mouth of the Rio Grande. It ties together binational communities—enabling the people of Texas and Mexico to access education, shopping, family, hospitals, and daycare facilities on either side of the border. Cross-border movement enables and contributes to the deeply rooted cultures in cities on both sides of the border. The border is the most important international trade gateway in the hemisphere and facilitates local cross-border manufacturing, as well as distant supply chains reaching from Ontario, Canada to Oaxaca, Mexico.

The common link that binds this region together is the infrastructure that supports the cross-border movement of people and goods.

Bridges across the Texas-Mexico border have facilitated social, cultural, and economic relations between the two countries since the late 19th century.³

**Infrastructure along the Texas-Mexico border helps facilitate the movement of people and goods**

---

¹ References to “borderwide” along the Texas-Mexico border refer to the 60-mile region north and south of the Texas-Mexico border.

² This chapter uses abbreviations to refer to the three border regions: El Paso/Santa Teresa/Chihuahua Region (abbreviated as El Paso Region), Laredo/Coahuila/Nuevo León/Tamaulipas Region (abbreviated as Laredo Region), and Rio Grande Valley/Tamaulipas Region (abbreviated as RGV Region).

³ Most bridges began development in the early 20th century.
Today, 34 border crossings along the Texas-Mexico border serve as a major gateway for all land modes of transportation, including commercial vehicles (CMV), passenger vehicles (POV), bikes/pedestrians, and freight rail. This includes 28 Texas-Mexico vehicle crossings, the Santa Teresa vehicle crossings, and 6 rail crossings. Borderwide socioeconomic changes, along with the overall United States and Mexico production and consumption patterns, all impact travel demand on the border crossings, multimodal corridors, and supporting facilities. The following sections illustrate these socioeconomic trends, followed by trade, infrastructure, and system performance from the past to the present.

3.1 Socioeconomic Conditions of the Texas-Mexico Border

3.1.1 Population

The Texas-Mexico border region experienced rapid growth, urbanization, and industrialization between 1990 and 2019, driven by high birth rates, migration, increased trade, and economic development. During this time:

- Binational borderwide population increased 70 percent, or 3.1 million people, between 1990 and 2019. Mexico border municipios added 1.8 million people and Texas border counties added 1.2 million people.
- Growth outpaced national trends on both sides, U.S. total population grew by 32 percent and Mexico grew by 54 percent versus 70 percent growth in the border region.
- Approximately 7.4 million people live along the Texas-Mexico border. As of 2019, 3 million live on the U.S. side and 4.4 million live on the Mexico side.
- Growth continues to add pressure on border crossing facilities and connecting transportation corridors.

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4 The BTMP also assesses the Santa Teresa border crossing in New Mexico due to Santa Teresa being included in the El Paso Metropolitan Planning Organization (MPO) Metropolitan Area Boundary (MAB). The number of vehicle crossings with Santa Teresa are 29.

5 Note the Presidio-Ojinaga International Rail Bridge is currently closed.


3.1.2 Employment

Employment growth along the Texas-Mexico border outpaced U.S. and Mexico national growth rates between 1990 and 2019. During this time:

- NAFTA ratification led to increases in U.S. and Mexico consumption, production, and trade—and borderwide economic development to support the increased trade.
- Binational border region employment grew by 97 percent from 1.5 million in 1990 to 2.9 million in 2019.
- The Texas border region employment grew 76 percent from 660,000 to 1.2 million, while the Mexico border region employment grew 114 percent from 830,000 to 1.8 million during the same duration.
3.1.3 Income

Wage increases lifted people out of poverty, attracted residents, and fueled demand for the movement of people and goods across the border regions.\textsuperscript{10}

\textsuperscript{8} U.S. Census Bureau; Instituto Nacional para el Federalismo y el Desarrollo Municipal (INAFED) (2015). Note: Texas employed defined as 16 years+, Mexico employed defined as 12 years+. 2019 extrapolated from 2010–2015 annualized growth rate.

\textsuperscript{9} U.S. Census Bureau; INAFED (2015). Note: Texas employed defined as 16 years+, Mexico employed defined as 12 years+. 2019 extrapolated from 2010–2015 annualized growth rate.

3.1.4 Education

The Texas-Mexico border region is becoming more educated, signaling a strong workforce for border trade-dependent industries, pushing wage growth. Citizens on both sides of the border cross daily to access schools for their children.

- **Incomes** in Texas border counties increased by **20 percent**, from $33,896 in 1990 to $40,543 in 2018, outpacing the U.S. national rate of **4 percent**.

- Texas **median household income increased** in each border region between 1990 and 2018 - by 35 percent in the Laredo region, by 21 percent in the RGV, and by 16 percent in the El Paso region.

- **Incomes in Mexico border states grew** between 2010 and 2015, with all states experiencing higher earnings compared to minimum wage.

- People **under the poverty line on the Texas side declined** from 36 percent in 1990 to 23 percent in 2018. One-fourth of Texas households along the border live in poverty, compared to one-fifth of households in the nation overall.

**Figure 3.1-5. Mexico Border States Wage Distribution Compared to Minimum Wage (2010 and 2015)**

![Figure 3.1-5](image)

### 3.1.4 Education

The Texas-Mexico border region is becoming more educated, signaling a strong workforce for border trade-dependent industries, pushing wage growth. Citizens on both sides of the border cross daily to access schools for their children.

- **Between 1990 and 2019, more people** in the Laredo and RGV Regions on the U.S. side graduated from high school, while the El Paso Region experienced the highest increases in higher education attainment.

- U.S. education trends are due to the expansion of federal education programs, growth in enrollment in online courses, funding assistance from higher-education institutions, and workforce training programs.

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11. INEGI (Anuario de Estadísticas por Entidad Federativa 2011), INEGI (Encuesta Intercensal 2015). Note for border region: in 2010 3.9% no income and 9.7% not specified; in 2015 1.1% no income and 10.5% not specified.

Between 1990 and 2015, Mexico has seen a 180 percent increase in the number of border region residents completing primary, secondary, preparatory, and university education.

Mexico's educational advancements are in part due to Educación Media Superior Obligatoria 2012, making upper secondary education compulsory.\textsuperscript{13}

The number of Mexican students not completing Secundaria decreased by over 69 percent in each region, while those completing Secundaria rose in by 291 percent in the El Paso Region, 314 percent in the Laredo Region, and 279 percent in the RGV Region.

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\textsuperscript{14} U.S. Census Bureau (1990–2019). Note: Accounts for Population 25+. Note: education systems are classified differently in Texas and Mexico.

3.2 History of Modern Texas-Mexico Border Infrastructure

International bridge development was spurred by the U.S.-Mexico Rio Grande Rectification Treaty of 1933. There are five distinct eras of border investments.

This section provides a historical summation of Texas-Mexico border infrastructure classified by five distinct eras of border investments.

First Half of the 20th Century (1900–1950s)

- The International Boundary and Water Commission constructed the first bridges—Fort Hancock–El Porvenir and Ysleta-Zaragoza.
- Local municipalities purchased private bridges—Del Rio–Ciudad Acuña International and Eagle Pass I in the 1940s.
- In the 1950s, the Progreso International Bridge was built, in addition to the reconstruction of four pre-war bridges—B & M, Eagle Pass I, Ysleta-Zaragoza, and Gateway to the Americas.
- Los Ebanos Ferry began operating in the 1950s.

Post-Chamizal Convention (1960–1970s)

- More border investments occurred between 1965 and 1979 following the resolution of U.S.-Mexico land disputes in the Chamizal Convention.
- In the 1960s, seven new crossings were constructed—Falcon Dam, McAllen-Hidalgo International, Rio Grande City-Camargo, Bridge of the Americas, Good Neighbor, Paso del Norte, and Lake Amistad Dam.
- In the 1970s, three new crossings were constructed—Gateway International, Juárez-Lincoln, and Roma–Ciudad Miguel Aleman.
- Border facility investments began, allowing the U.S. Customs Service and other federal inspection agency stations to control entry into and out of the U.S.

Slowing Investments (1980s)

- Border crossing investment declined due to the U.S. recession and the Mexico debt crisis.
- In the 1980s, one new bridge was constructed—Presidio Bridge. Three bridges were also improved—Eagle Pass I, Del Rio–Ciudad Acuña International, and McAllen-Hidalgo International.


- Just before NAFTA’s ratification, three border crossings were constructed—Laredo-Colombia Solidarity, Santa Teresa, and Free Trade Bridge.
- After NAFTA was signed, four additional new bridge crossings completed construction—Pharr-Reynosa International Bridge on the Rise, Camino Real International, Veterans International at Los Tomates, and World Trade Bridge.
During these decades, Ysleta-Zaragoza was again reconstructed, and investments were made to improve three bridges—Bridge of the Americas, Progreso International, and Good Neighbor.

Following the events of September 11, 2001, the U.S. Customs Service was transformed into U.S. Customs and Border Protection (CBP), along with the creation of U.S. Department of Homeland Security (DHS) in 2002, increasing border security.

The Last Ten Years (2009–2019)


In 2015, the Brownsville West Rail Bridge was constructed—the first new rail crossing built across the Rio Grande River in over 100 years.

During this decade, the Free Trade Bridge, Veterans International at Los Tomates, and Presidio were expanded.

In the Laredo/Coahuila/Nuevo León/Tamaulipas Region, the last new crossing was constructed in 2000, while the last improvement in an existing crossing occurred in 1987.

Although trade is growing, border crossing investments have not kept pace.

Since the implementation of NAFTA in 1994, Texas-Mexico cross-border trade has quadrupled in value up to the present day. However, only 10 bridge crossings along the Texas-Mexico border were built or improved upon since.

The September 11, 2001 terrorist attacks fundamentally altered border security and operating procedures, but only three crossings were designed and built with those enhanced screening procedures in mind.

Only one-third of CBP border facilities constructed since 1980 have received additional investment.

The U.S.-Mexico-Canada Agreement (USMCA), the increasing trend of nearshoring manufacturing in Mexico, and continued population growth places additional pressure on border crossings.
Figure 3.2-1 provides the last year of investment\textsuperscript{16} for each of the 28 vehicle crossings along the Texas-Mexico border and the vehicle crossing at Santa Teresa.

\textsuperscript{16} Year of most recent investment based on limited publicly available information.
Table 3.2-1 displays the number of border crossings and CBP border processing facilities, respectively, on the Texas-Mexico Border relative to various external events.

<table>
<thead>
<tr>
<th>External Event (All investments Since)</th>
<th>Border Crossings</th>
<th>Border Crossings</th>
<th>Border Crossings</th>
<th>CBP Border Facilities</th>
<th>CBP Border Facilities</th>
<th>CBP Border Facilities</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>New Construction</td>
<td>Reconstruction/Replacement</td>
<td>Expansion</td>
<td>New Construction</td>
<td>Reconstruction/Replacement</td>
<td>Expansion</td>
</tr>
<tr>
<td>World War II</td>
<td>24</td>
<td>10</td>
<td>8</td>
<td>28</td>
<td>6</td>
<td>12</td>
</tr>
<tr>
<td>Chamizal Land Dispute Resolution (1964)</td>
<td>21</td>
<td>6</td>
<td>8</td>
<td>24</td>
<td>6</td>
<td>12</td>
</tr>
<tr>
<td>NFTA (1990)</td>
<td>10</td>
<td>4</td>
<td>6</td>
<td>13</td>
<td>6</td>
<td>12</td>
</tr>
<tr>
<td>9/11 (2001)</td>
<td>3</td>
<td>2</td>
<td>5</td>
<td>3</td>
<td>4</td>
<td>9</td>
</tr>
<tr>
<td>Great Recession (2009)</td>
<td>3</td>
<td>1</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td>COVID-19 (2020)</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
</tbody>
</table>

Border crossings have different owners and operators and include federal, state, local, and private organizations. Table 3.2-2. Owners/Operators of Border Crossings in El Paso/Santa Teresa/Chihuahua Region

Table 3.2-2. Owners/Operators of Border Crossings in El Paso/Santa Teresa/Chihuahua Region

<table>
<thead>
<tr>
<th>Border Crossing</th>
<th>Location (City)</th>
<th>Owner</th>
<th>Operator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Santa Teresa</td>
<td>Santa Teresa, NM</td>
<td>U.S. – General Services Administration</td>
<td>U.S. – CBP</td>
</tr>
<tr>
<td></td>
<td>San Jerónimo, Chih.</td>
<td>Mexico – Government of Mexico</td>
<td>Mexico – Aduanas de Mexico</td>
</tr>
<tr>
<td>Good Neighbor</td>
<td>El Paso, TX</td>
<td>U.S. – City of El Paso</td>
<td>U.S. – City of El Paso</td>
</tr>
<tr>
<td></td>
<td>Ciudad Juárez, Chih.</td>
<td>Mexico – Government of Mexico</td>
<td>Mexico – Government of Chihuahua</td>
</tr>
<tr>
<td></td>
<td>Ciudad Juárez, Chih.</td>
<td>Mexico – Government of Mexico</td>
<td>Mexico – Government of Chihuahua</td>
</tr>
</tbody>
</table>

17 Numbers reflect multiple projects across border crossings.
<table>
<thead>
<tr>
<th>Border Crossing</th>
<th>Location (City)</th>
<th>Owner</th>
<th>Operator</th>
</tr>
</thead>
</table>
| Bridge of the Americas         | El Paso, TX, Ciudad Juárez, Chih.         | ▪ U.S. – International Boundary and Water Commission (IBWC) (U.S. Section)  
▪ Mexico – IBWC (Mexican Section) | ▪ U.S. – CBP  
▪ Mexico – Aduanas de México |
| Ysleta-Zaragoza                 | El Paso, TX, Ciudad Juárez, Chih.         | ▪ U.S. – City of El Paso  
▪ Mexico – Government of Mexico | ▪ U.S. – City of El Paso  
▪ Mexico – Government of Chihuahua |
| Tornillo-Guadalupe International Bridge | Fabens, TX, Caseta, Chih.               | ▪ U.S. – El Paso County  
▪ Mexico – Government of Mexico | ▪ U.S. – El Paso County  
▪ Mexico – Government of Chihuahua |
| Fort Hancock–El Porvenir        | Fabens, TX, El Porvenir, Chih.            | ▪ U.S. – IBWC (U.S. Section)  
▪ Mexico – Government of Mexico | ▪ U.S. – CBP  
▪ Mexico – Government of Mexico and IBWC |
| Presidio                        | Presidio, TX, Ojinaga, Chih.              | ▪ U.S. – State of Texas  
▪ Mexico – Government of Mexico | ▪ U.S. – Texas Department of Transportation  
▪ Mexico – CAPUFE |

Table 3.2-3. Owners/Operators of Border Crossings in Laredo/Coahuila/Nuevo León/Tamaulipas Region\(^\text{19}\)

<table>
<thead>
<tr>
<th>Border Crossing</th>
<th>Location (City)</th>
<th>Owner</th>
<th>Operator</th>
</tr>
</thead>
</table>
| Del Rio–Ciudad Acuña            | Del Rio, TX, Ciudad Acuña, Coah.          | ▪ U.S. – City of Del Rio  
▪ Mexico – Government of Mexico | ▪ U.S. – City of Del Rio  
▪ Mexico – CAPUFE |
| Lake Amistad Dam                | Del Rio, TX, Ciudad Acuña, Coah.          | ▪ U.S. – IBWC (U.S. Section)  
▪ Mexico – IBWC (Mexican Section) | ▪ U.S. – CBP  
▪ Mexico – Aduanas de México |
| Eagle Pass I                    | Eagle Pass, TX, Piedras Negras, Coah.     | ▪ U.S. – City of Eagle Pass  
▪ Mexico – Government of Mexico | ▪ U.S. – City of Eagle Pass  
▪ Mexico – CAPUFE |
| Camino Real International       | Eagle Pass, TX, Piedras Negras, Coah.     | ▪ U.S. – City of Eagle Pass  
▪ Mexico – Government of Mexico | ▪ U.S. – City of Eagle Pass  
▪ Mexico – Government of Coahuila |
| World Trade Bridge              | Laredo, TX, Nuevo Laredo, Tamps.          | ▪ U.S. – City of Laredo  
▪ Mexico – Government of Mexico | ▪ U.S. – City of Laredo  
▪ Mexico – CAPUFE |
| Laredo-Colombia Solidarity      | Laredo, TX, Colombia, NL                 | ▪ U.S. – City of Laredo  
▪ Mexico – Government of Mexico | ▪ U.S. – City of Laredo  
▪ Mexico – CODEFRONT |
| Gateway to the Americas         | Laredo, TX, Nuevo Laredo, Tamps.          | ▪ U.S. – City of Laredo  
▪ Mexico – Government of Mexico | ▪ U.S. – City of Laredo  
▪ Mexico – CAPUFE |

<table>
<thead>
<tr>
<th>Border Crossing</th>
<th>Location (City)</th>
<th>Owner</th>
<th>Operator</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Table 3.2-4. Owners/Operators of Border Crossings in Rio Grande Valley/Tamaulipas Region20</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Border Crossing</td>
<td>Owner</td>
<td>Operator</td>
<td></td>
</tr>
<tr>
<td>Roma–Ciudad Miguel Alemán</td>
<td>▪ Roma, TX ▪ Ciudad Miguel Alemán, Tamps.</td>
<td>▪ U.S. – Starr County ▪ Mexico – Government of Mexico</td>
<td>▪ U.S. – Starr County ▪ Mexico – CAPUFE</td>
</tr>
<tr>
<td>Lake Falcon Dam</td>
<td>▪ Falcon Heights, TX ▪ Ciudad Guerrero, Tamps.</td>
<td>▪ U.S. – IBWC (U.S. Section) ▪ Mexico – IBWC (Mexico Section)</td>
<td>▪ U.S. – CBP ▪ Mexico – Aduanas de Mexico</td>
</tr>
<tr>
<td>Free Trade Bridge</td>
<td>▪ Los Indios, TX ▪ Lucio Blanco, Tamps.</td>
<td>▪ U.S. – Cameron County, City of San Benito, and City of Harlingen ▪ Mexico – Government of Mexico</td>
<td>▪ U.S. – Cameron County International Bridge System ▪ Mexico – COPA</td>
</tr>
<tr>
<td>Veterans International at Los Tomates</td>
<td>▪ Brownsville, TX ▪ Matamoros, Tamps.</td>
<td>▪ U.S. – Cameron County and City of Brownsville ▪ Mexico – Government of Mexico</td>
<td>▪ U.S. – Cameron County International Bridge System ▪ Mexico – CAPUFE</td>
</tr>
<tr>
<td>B &amp; M21</td>
<td>▪ Brownsville, TX ▪ Matamoros, Tamps.</td>
<td>▪ U.S. and Mexico – Brownsville &amp; Matamoros Bridge Company, a subsidiary of the Union Pacific Railroad and the Federal Government of Mexico</td>
<td>▪ Brownsville &amp; Matamoros Bridge Company, a subsidiary of the Union Pacific Railroad and the Federal Government of Mexico</td>
</tr>
</tbody>
</table>

---

21 B & M is currently not a railroad crossing. In 2015, the B & M Bridge was converted from serving rail cars and vehicles to vehicles only.
Border Crossing   Owner                                      Operator
------------------------------   ------------------------------   ------------------------------
**Gateway International**   ▪ Brownsville, TX ▪ Matamoros, Tamps.   ▪ U.S. – Cameron County ▪ Mexico – Government of Mexico   ▪ U.S. – Cameron County International Bridge System ▪ Mexico – CAPUFE

### 3.2.1 Historical Border Crossing Investments

Funding for border crossing infrastructure has not kept pace with cross-border trade growth. Between 1994 and 2019, Texas-Mexico border crossings received $290 million for new crossings, expansions, and rehabilitation.

**El Paso/Santa Teresa/Chihuahua Region**

The El Paso/Santa Teresa/Chihuahua Region border crossings obtained $44.6 million in investments for border crossing infrastructure from 1994–2019.

- **Good Neighbor** invested $8.9 million for a bridge rehabilitation project in 2004.
- **Bridge of the Americas** utilized $2.7 million for a replacement project in 1998.
- **Tornillo-Guadalupe International Bridge** was constructed in 2016 for $23.8 million, replacing the Fabens-Caseta Bridge.
- **Presidio Bridge** began a bridge expansion for $9.2 million in 2019, which is currently ongoing.
Figure 3.2-2. El Paso/Santa Teresa/Chihuahua Region Border Crossing Funding, 1994–2019\(^{22,23}\)

<table>
<thead>
<tr>
<th>Location</th>
<th>Investments ($Millions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Santa Teresa</td>
<td>$8.9</td>
</tr>
<tr>
<td>Good Neighbor</td>
<td>$2.7</td>
</tr>
<tr>
<td>Paso Del Norte</td>
<td>$0.0</td>
</tr>
<tr>
<td>Bridge of the Americas</td>
<td>$0.0</td>
</tr>
<tr>
<td>Ysleta-Zaragoza</td>
<td>$0.0</td>
</tr>
<tr>
<td>Tornillo-Guadalupe Intl.</td>
<td>$23.8</td>
</tr>
<tr>
<td>Fort Hancock-El Porvenir</td>
<td>$9.2</td>
</tr>
<tr>
<td>Presidio</td>
<td>$0.0</td>
</tr>
</tbody>
</table>

**Laredo/Coahuila/Nuevo León/Tamaulipas Region**

The Laredo/Coahuila/Nuevo León/Tamaulipas Region obtained $125.2 million in investments for border crossing infrastructure from 1994–2019 on two initial bridge construction projects.

- **Camino Real International Bridge** was constructed in 1999 for $30 million.
- **World Trade Bridge** was built in 2000 for $95.2 million.

Figure 3.2-3. Laredo/Coahuila/Nuevo León/Tamaulipas Region Border Crossing Funding (1994–2019)\(^{24}\)

<table>
<thead>
<tr>
<th>Location</th>
<th>Investments (in $Millions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Del Rio-Ciudad Acuña Intl.</td>
<td>$0.0</td>
</tr>
<tr>
<td>Lake Amistad Dam</td>
<td>$0.0</td>
</tr>
<tr>
<td>Eagle Pass I</td>
<td>$0.0</td>
</tr>
<tr>
<td>Camino Real Intl.</td>
<td>$30.0</td>
</tr>
<tr>
<td>World Trade</td>
<td>$95.2</td>
</tr>
<tr>
<td>Laredo-Columbia Solidarity</td>
<td>$0.0</td>
</tr>
<tr>
<td>Gateway to the Americas</td>
<td>$0.0</td>
</tr>
<tr>
<td>Juarez-Lincoln</td>
<td>$0.0</td>
</tr>
</tbody>
</table>

**Rio Grande Valley/Tamaulipas Region**

The Rio Grande Valley/Tamaulipas Region border crossings obtained $120.1 million investments for border crossing infrastructure from 1994 to 2019.

- **Anzalduas International** was built in 2009 for $28.5 million.

---

3.3 Binational and Multimodal Trade Overview

The Texas-Mexico border sustains North American goods movement that touches all 50 U.S. states, Mexico states, Canadian provinces, and international origins and destinations across the globe.

- **Free Trade Bridge** underwent an expansion project in 2009 for $320,000.
- **Pharr-Reynosa International Bridge on the Rise** was constructed in 1994 for $18 million.
- **Veterans International at Los Tomates** was constructed in 1999 for $19.3 million and expanded in 2014 for $11 million.
- **B & M** was expanded in 1997 for $5 million.
- **Donna International** was built in 2010 for $30 million.
- **Progreso International** underwent a bridge replacement for $8 million in 2003.

![Figure 3.2-4. Rio Grande Valley/Tamaulipas Region Border Crossing Funding (1994–2019)](image)

- Since the ratification of NAFTA, trade across the Texas-Mexico border quadrupled, growing from $111 billion in 1994 to $451 billion in 2019. During this time, the value of northbound flows increased faster than the value of southbound flows, as illustrated in Figure 3.3-1 below.
- Between 1994 and 2019, cross-border truck trade increased by 226 percent and cross-border rail trade increased by 400 percent. By truck, trade grew from $95 billion to $310 billion. Rail movements grew from $15 billion to $75 billion.
- A majority of U.S.-Mexico trade is handled by the Texas-Mexico border. Texas POEs processed $385 billion in truck and rail trade in 2019, making up 76 percent of the $509.5 billion in total U.S.-Mexico truck and rail trade.
- The continued growth in trade strains the throughput capacity of border infrastructure.

---


26 Trade values include Santa Teresa, NM.
This section illustrates the total increase in the value of trade (Figure 3.3-1); trends in northbound and southbound trade (Figure 3.3-2); supply chain values for 1994 (Figure 3.3-3) and 2019 (Figure 3.3-4) cross-border trade connections to Texas counties (Figure 3.3-5), and to U.S. and Mexican states (Figure 3.3-6).

Cross-border supply chains support critical industries in the U.S. and Mexico and form the foundation of multimodal, binational trade.

The top three supply chains by value from 1994 through 2019 are High Tech, Motor Vehicles, and Machinery, as detailed in Figure 3.3-3 and Figure 3.3-4. In 2019, $135.6 billion in High Tech, $88.8 billion in Motor Vehicles, and $56.6 billion in Machinery were traded through the Texas-Mexico border. Figure 3.3-3 and Figure 3.3-4 provide the amount of trade by supply chain through the Texas-Mexico border for 1994 and 2019, respectively.

---


28 BTS TransBorder Freight Data (2006–2019), values adjusted to 2019 dollars. Values include Santa Teresa, NM.
Industries in all Texas counties rely on cross-border trade—from high tech industries in north and central Texas, diversified agriculture in the Panhandle, food processing in east Texas, and petroleum and manufacturing in west Texas.

---


30 U.S. Census Bureau Trade Data (Trade Data Online), Freight Analysis Framework (FAF), and Bureau of Transportation Statistics Trans-Border Freight Data—all for 2019. Gray color for “Other.”
Figure 3.3-5. Value of Cross-border Trade by Texas Counties Origin and Destination (2019)\textsuperscript{31}  
Northbound Movements: Trade Destinations by County

\begin{figure}
\centering
\includegraphics[width=\textwidth]{figure3.3.5a.png}
\caption{USD in Billions}
\end{figure}

\begin{figure}
\centering
\includegraphics[width=\textwidth]{figure3.3.5b.png}
\caption{Southbound Movements: Trade Origins by County}
\end{figure}

\begin{figure}
\centering
\includegraphics[width=\textwidth]{figure3.3.5c.png}
\caption{USD in Billions}
\end{figure}

\begin{figure}
\centering
\includegraphics[width=\textwidth]{figure3.3.5d.png}
\caption{USD in Billions}
\end{figure}

\footnotesize{\textsuperscript{31} U.S. Census Trade Data Online 2019 and Transearch. Approximation for Texas counties based on Transearch 2015 proportions.}
Border trade touches every U.S. and Mexican state. It enables cross-border, bidirectional automotive supply chains to function seamlessly between Puebla and Michigan; it facilitates the movement of southbound Nebraska grain by unit train to breweries in Jalisco and northbound refrigerated trucks carrying beer north; it allows consumers across the U.S. to buy fresh avocados from Michoacán, and for manufacturers in Nuevo León to procure industrial machinery built in Ohio.

Figure 3.3-6 illustrates the amount of trade by each state through the Texas-Mexico border. The darker shading indicates higher amounts of trade in each direction – northbound and southbound.

Figure 3.3-6. Value of Cross-border Trade by State of Origin and Destination, 2019

Northbound Movements: Origins (MX) and Destinations (US)

---

A vast and binational multimodal infrastructure system supports integrated supply chains between the border crossings and local, regional, national, and international destinations across North America and the world.

U.S.-Mexico trade through Texas ports of entry (POEs)\textsuperscript{33} is carried not only by truck and rail at land border crossings but also by maritime, aviation, and pipeline systems. Together, these systems link local and global supply chains to consumers and manufacturers in the border region and across North America.

### 3.4 Highway and Roadway Network

The highway system is the primary conduit for people and goods movement. In the Texas-Mexico border region, the highway network facilitates daily life for millions of residents and sustains local and global trade.

The highway and roadway network in the Texas-Mexico border region and the 28 vehicle border crossings, plus the Santa Teresa crossing, are critical to facilitating the safe, efficient, and reliable movement of people and goods as shown in Figure 3.4-1.

\textsuperscript{33} A port of entry (POE) refers to any place designated by Executive Order of the President, by order of the Secretary of the Treasury, or by Act of Congress, at which a U.S. CBP officer is authorized to accept entries of merchandise to collect duties, and to enforce the various provisions of the customs and navigation laws (19 CFR Section 101.1).
The Texas-Mexico border region is served by a network of 30,200 lane miles. This includes interstates and freeways, rural and urban highways, arterials, and collector streets.

Border crossings underpin the regional economy. From daily commuting to work or school, short-distance trucking for local retail supplies and long-haul trailers, and last-mile access to major warehouses, distribution centers, and manufacturing facilities, border crossings are key.

The highway and roadway system connects the “interior” with the “frontera” and beyond. On both sides of the border, the system carries out the vital function of enabling short- and long-distance goods and travelers to reach an expansive range of destinations.

The highway roadway system is about three times denser on the Texas side of the border than in Mexico. This means that there are three times more lane miles per square mile on the Texas side of the border than on the Mexico side.

The highway and roadway system has struggled to evolve with changing needs, and system capacity has not kept pace with growth in demand.
### 3.4.1 Roadway Capacity

Between 2006 and 2018, roadway capacity in the Texas border region increased 16 percent from 25,891 lane miles to 29,951 lane miles.

Figure 3.4-2 and Figure 3.4-3 show the lane miles by functional class and within each region. In summary:

- On the Texas side of the El Paso/Santa Teresa/Chihuahua Region, borderwide lane miles grew by 5 percent during this period, adding 474 lane miles.
- On the Texas side of the Laredo/Coahuila/Nuevo León/Tamaulipas Region, borderwide lane miles increased 15 percent between 2006 and 2018, adding 1,466 lane miles.
- The Texas side of the Rio Grande Valley/Tamaulipas Region, which has the highest number of lane miles, experienced a 31 percent increase, with 2,120 added lane miles.

---

**Figure 3.4-2. Texas Borderwide Lane Miles by Functional Class (2006–2018)**

- **Interstates/Freeways**
- **Principal Arterials**
- **Minor Arterials**
- **Collectors**

**Figure 3.4-3. Texas Borderwide Lane Miles by Region (2006–2018)**

- **El Paso Region**
- **Laredo Region**
- **RGV Region**

---

34 TxDOT Roadway Inventory (2006–2018). Note that 2005 lane mile classifications are not included due to inconsistent classification for 2005 compared to later years in the dataset.

35 TxDOT Roadway Inventory (2006–2018). Note that 2005 lane mile classifications are not included due to inconsistent classification for 2005 compared to later years in the dataset.
### 3.4.2 Vehicle-miles Traveled

Between 2005 and 2018, passenger vehicle-miles traveled (VMT) in the Texas border region increased by 35 percent, from 44.4 million VMT to 60 million VMT—growing twice as fast as capacity improvements.

- On the Texas side of the El Paso/Santa Teresa/Chihuahua Region, borderwide passenger VMT grew by 38 percent during the same time, with an increase of 5.9 million VMT.
- The Texas side of the Laredo/Coahuila/Nuevo León/Tamaulipas Region experienced the most growth in passenger VMT between 2005 and 2018, increasing 44 percent with 3.7 million added VMT.
- The Texas side of the Rio Grande Valley/Tamaulipas Region experienced steady growth in passenger VMT of 29 percent with the addition of 6 million VMT.

![Figure 3.4-4. Texas Borderwide Daily Passenger VMT (2005–2018)](image)

Between 2005 and 2018, commercial VMT in the Texas border region increased 17 percent from 7.8 million VMT to 9.2 million VMT.

- In the El Paso/Santa Teresa/Chihuahua Region, Texas borderwide commercial VMT grew 18 percent, or 570,137 additional VMT.
- The Laredo/Coahuila/Nuevo León/Tamaulipas Region experienced the most growth in commercial VMT between 2005 and 2018, increasing by 51 percent, or 1.1 million VMT.
- The Rio Grande Valley/Tamaulipas Region’s commercial VMT experienced an uptick starting in 2016. However, between 2005 and 2018, the region’s VMT decreased by 383,613 VMT.

---

3.4.3 Movement of Goods by Commercial Vehicle (CMV)

Cross-border CMV Trade

Between 2006 and 2019, Texas-Mexico border trade by CMV increased 66 percent from $205 billion to $340 billion.

- Cross-border CMV trade increased across all regions. Between 2006 and 2019, trade increased by $39.9 billion, or 72 percent, in the El Paso/Santa Teresa/Chihuahua Region, by $86 billion, or 79 percent, in the Laredo/Coahuila/Nuevo León/Tamaulipas Region, and by $8.7 billion, or 21 percent, in the Rio Grande Valley/Tamaulipas Region.
Between 2006 and 2019, CMV trade value increased at all but three POEs along the border.

- CMV trade value grew by 83 percent, or $82.6 billion, at the Laredo POE during this period.
- In the El Paso/Santa Teresa/Chihuahua Region, trade value at the Santa Teresa POE grew 20-fold, by $28.3 billion.
- In the Rio Grande Valley/Tamaulipas Region, the Hidalgo POE grew the most in value with an additional $7 billion, and the Progreso POE grew the fastest, increasing by 33 percent from $277.3 million in 2006 to $368.9 million in 2019.

### Cross-border CMV Movements

#### Northbound

Between 1996 and 2019, the number of CMVs crossing the border northbound more than doubled, growing by 112 percent. A total of 14 border crossings currently process CMVs.

**The number of northbound trucks increased by 2.4 million or 112% since 1996.**

<table>
<thead>
<tr>
<th>2.2 Million CMVs (1996)</th>
<th>4.6 Million CMVs (2019)</th>
</tr>
</thead>
</table>

**Note:** Includes Santa Teresa POE in New Mexico

- Between 1996 and 2019:42
  - In the Laredo/Coahuila/Nuevo León/Tamaulipas Region, the number of northbound CMV crossings increased by 135 percent, or 1.5 million crossings.
  - The Rio Grande Valley/Tamaulipas Region experienced 117 percent growth in northbound CMV crossings, representing an increase of 565,686 crossings.
  - The El Paso/Santa Teresa/Chihuahua Region’s northbound CMV crossings rose by 62 percent, or 358,731 crossings.
Northbound CMV volumes increased at all but one border crossing between 2008 and 2019.44

- During this period, World Trade Bridge experienced the largest absolute growth with over 790,000 added northbound CMV crossings, from 2008 to 2019, while crossings at Camino Real International increased by almost 80 percent, with 77,841 additional crossings.

- Northbound CMV crossings at Ysleta-Zaragoza increased by 237,468, or 69 percent, between 2008 and 2019. Santa Teresa experienced an increase of 86 percent between 2011 and 2019, representing an increase of 61,761 crossings.

- In the Rio Grande Valley/Tamaulipas Region, northbound CMV crossings grew by 73 percent at Free Trade Bridge between 2008 and 2019, representing an increase of 26,215 crossings. Crossings at Pharr-Reynosa International Bridge on the Rise increased by almost 176,000.

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Southbound

Due to limited data reporting of southbound volumes, southbound CMV volumes are only reported here by individual border crossing. Additionally, years of available southbound data vary by border crossing.

Over the past few decades, southbound CMV volumes have generally increased across the Texas-Mexico border.

- Between 1991 and 2019, southbound CMV volumes at Ysleta-Zaragoza have increased by 575 percent, or 474,814 crossings.
- Between 2001 and 2019, World Trade Bridge grew 86 percent, from 1.1 million crossings to 2.1 million crossings.

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3.4.4 Movement of People

Between 1996 and 2019, Texas-Mexico northbound movements of people by land POEs decreased by 37 percent.\(^{48}\)

- **Millions of people cross the Texas-Mexico border annually**, connecting the binational economies along the border and to points across the U.S., Mexico, and Canada.

- **Citizens in both the U.S. and Mexico cross the border daily** to access daycare facilities, hospitals, and schools on opposite sides of the border.

- **Between 1996 and 2019, northbound POV crossing the border declined by 22.8 percent**, and northbound buses declined 2.7 percent. Meanwhile, northbound bicycles/pedestrians increased by 18.4 percent.

- **POV usage still accounts for the highest share of people moving northbound** across the border at 62 percent, followed by bicycles/pedestrians at 38 percent.
Passenger Vehicles

Northbound

Although the population along the border grew by 70 percent between 1996 and 2019, northbound passenger vehicles (POVs) moving across the border declined 23 percent, from 42.5 million POVs to 32.8 million POVs.50

- Out of the 28 Texas-Mexico vehicle crossings, 27 process POVs. Santa Teresa also processes POVs.
- Long crossing times discourage cross-border POV movement.51
- Improved retail in Mexico and e-commerce disincentivize cross-border trips.52
- High northbound crossing times also impact southbound crossing frequency. Security concerns perceived by local border regions also diminish the desire or ability of people to travel to Mexico.53
- Northbound POV movement declined in each of the three border regions. Between 1996 and 2019, northbound POVs in the El Paso/Santa Teresa/Chihuahua Region decreased by 4 million POVs, or 25 percent. The Laredo/Coahuila/Nuevo León/Tamaulipas Region experienced a 14 percent decline – a decrease of 1.6 million, and the Rio Grande Valley/Tamaulipas Region experienced 27 percent decline – a decrease of 4 million POVs.

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Northbound POV crossings declined at the majority of border crossings in the Laredo/Coahuila/Nuevo León/Tamaulipas Region and Rio Grande Valley/Tamaulipas Regions between 2008 and 2019, while crossings increased at most border crossings in the El Paso/Santa Teresa/Chihuahua Region.\textsuperscript{55}

- In the El Paso/Santa Teresa/Chihuahua Region, northbound POV crossings declined at Bridge of the Americas by 3 million, or 49 percent, between 2008 and 2019. Crossings also declined by 14 percent at Fort Hancock–El Porvenir, with 17,772 fewer crossings. POV volumes increased at the region’s remaining border crossings.

- The Laredo/Coahuila/Nuevo León/Tamaulipas Region experienced declines in northbound POV volumes at the majority of border crossings between 2008 and 2019. The largest declines occurred at the Juárez-Lincoln Bridge, which experienced a 41 percent decline, or 1.8 million fewer POVs. Meanwhile, crossings at Gateway to the Americas increased 76 percent from 1.2 million to 2.1 million.

- Similarly, northbound POV crossings decreased at most border crossings in the Rio Grande Valley/Tamaulipas Region during this period. McAllen-Hidalgo International crossings declined by 61 percent, from 5.2 million POV crossings in 2008 to 2 million crossings in 2019.

\textsuperscript{54} BTS Border Entry Data, 1996–2019.

Figure 3.4-19. Laredo/Coahuila/Nuevo León/Tamaulipas Region Northbound POV by Border Crossing (2008-2019)

Figure 3.4-20. Rio Grande Valley/Tamaulipas Region Northbound POV by Border Crossing (2008-2019)
Southbound

Due to limited data reporting of southbound volumes, southbound POV volumes are only reported here by individual border crossing. Additionally, years of available southbound data vary by border crossing. Over the past few decades, trends in southbound POV volumes varied across the Texas-Mexico border.

- Between 1991 and 2019, southbound POV volumes increased by 28 percent at Ysleta-Zaragoza, from 1.9 million crossings to 2.4 million crossings. Meanwhile, Good Neighbor experienced a 56 percent decline, with 1.2 million fewer crossings.
- Since 2001, southbound POV crossings declined by 26 percent, or 533,304, at Gateway to the Americas and by 10 percent, or 543,242, at Juárez-Lincoln. During the same time, Laredo-Colombia Solidarity grew by 38 percent.
- In the Rio Grande Valley/Tamaulipas Region, Free Trade Bridge experienced 47 percent growth between 1993 and 2016, with 349,644 additional crossings. Donna International grew 80 percent between 2011 and 2019, with 247,286 added crossings. However, southbound POV volumes declined by 2.1 million, or 61 percent, at Gateway International between 1990 and 2016, while volumes declined by 1.2 million, or 66 percent, at Pharr-Reynosa International Bridge on the Rise between 2000 and 2019.

Figure 3.4-21. El Paso/Santa Teresa/Chihuahua Region Southbound POV by Border Crossing (1990–2019)

Figure 3.4-22. Laredo/Coahulla/Nuevo León/Tamaulipas Region Southbound POV by Border Crossing (1990–2019)

Figure 3.4-23. Rio Grande Valley/Tamaulipas Region Southbound POV by Border Crossing (1990–2019)

Bike and Pedestrians

Northbound

Northbound bike/pedestrian cross-border movements increased by 18 percent from 1996 to 2019, from 16.9 million to 20 million crossings.\(^59\)

- Out of the 28 Texas-Mexico vehicle border crossings, 23 currently facilitate bike/pedestrian crossings. The Santa Teresa crossing also supports bike/pedestrian crossings.
- Northbound bike and pedestrian movements across the Texas-Mexico border increased between 1996 and 2002, but have since then decreased to levels similar to the late 1990s.
- Between 1996 and 2019, northbound bike and pedestrian movements increased in the Laredo/Coahuila/Nuevo León/Tamaulipas Region by 10 percent with 445,825 added crossings, and in the El Paso/Santa Teresa/Chihuahua Region by 83 percent with 3.7 million additional crossings. However, northbound movements decreased in the Rio Grande Valley/Tamaulipas Region by 13 percent, or 1.1 million crossings.
- More passengers are opting to bike or walk as POV crossing times increase.\(^60\)

Across the Texas-Mexico border, border crossings typically experienced an increase of northbound pedestrians between 2008 and 2019.\(^62\)

- In the El Paso/Santa Teresa/Chihuahua Region, Paso del Norte experienced a decline of 1.8 million crossings, representing a 29 percent decrease. However, northbound pedestrian crossings increased at Bridge of the Americas by 83 percent, or 672,904 crossings, and at Ysleta-Zaragoza by 76 percent, or 742,546 crossings. Pedestrian crossings at Presidio also grew by 825 percent between 2008 and 2019, with an additional 275,374 crossings.
- In the Laredo/Coahuila/Nuevo León/Tamaulipas Region, pedestrian crossings increased by 307 percent at Del Rio–Ciudad Acuña International with 178,700 added crossings, and by 302 percent at Camino Real International with 173,215 added crossings. Meanwhile, crossings at the region’s largest northbound pedestrian crossing, Gateway to the Americas, declined by 26 percent from 3.8 million to 2.8 million.


\(^60\) Stakeholder Consultation, Progreso International Bridge, March 11, 2020; Stakeholder Consultation, B&M Bridge Company, March 9, 2020; Stakeholder Consultation, City of Del Rio, February 26, 2020.


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In the Rio Grande Valley/Tamaulipas Region, between 2008 and 2019, the largest absolute growth in northbound pedestrian crossings occurred at McAllen-Hidalgo International, with an added 366,957 crossings, or 19 percent growth. Free Trade Bridge grew the fastest, increasing by 721 percent, or 17,027 crossings.

Southbound

Due to limited data reporting of southbound volumes, southbound pedestrian volumes are only reported here by individual border crossing. Additionally, availability of southbound data varies by year and by border crossing.

Southbound pedestrian crossings across the Texas-Mexico border generally decreased or remained stable over the past few decades.

- Between 1991 and 2019, southbound pedestrian volumes increased 322 percent at Ysleta-Zaragoza, with 640,087 additional crossings. Meanwhile, southbound crossings at Good Neighbor experienced a decline of 66 percent, or 1.3 million fewer crossings.

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Between 2001 and 2018, southbound pedestrian volumes decreased at Gateway to the Americas by 23 percent, or 963,880 crossings.

In the Rio Grande Valley/Tamaulipas Region, southbound pedestrian volumes increased at Free Trade Bridge by 1,240 crossings or 251 percent, Veterans International at Los Tomates by 6,514 crossings or 252 percent, and at Progreso International by 167,073 crossings or 24 percent. However, southbound pedestrian crossings decreased at Gateway International by 31 percent between 1990 and 2016, from 3.1 million crossings to 2.1 million crossings.

### Buses

Buses are processed at 10 of the 28 Texas-Mexico vehicle border crossings. Santa Teresa also process busses. The Texas-Mexico border region includes a variety of fixed route, flex route, paratransit, shuttle, intercity, and international bus services. The following tables provide current transit services by region.

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### Table 3.4-1. El Paso/Santa Teresa/Chihuahua Region Transit Services\(^{69}\)

<table>
<thead>
<tr>
<th>Name</th>
<th>Type</th>
<th>Coverage</th>
</tr>
</thead>
<tbody>
<tr>
<td>El Paso County Transit</td>
<td>Fixed route rural transit service and commuter service</td>
<td>Various rural connections, along with commuter service such as Las Cruces-El Paso</td>
</tr>
<tr>
<td>South Central Regional Transit District</td>
<td>Fixed route rural transit service including small unincorporated communities and municipalities</td>
<td>Primarily Doña Ana County, some service in Sierra County, with connections to Otero and El Paso Counties</td>
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<tr>
<td>Sun Metro</td>
<td>Fixed line route, circulator, express</td>
<td>El Paso/Santa Teresa/Chihuahua Region</td>
</tr>
<tr>
<td>Vivabus Juárez</td>
<td>Fixed route</td>
<td>Ciudad Juárez</td>
</tr>
<tr>
<td>Amtrak</td>
<td>Public intercity</td>
<td>Sunset Limited and Texas Eagle routes</td>
</tr>
<tr>
<td>Greyhound</td>
<td>Private intercity</td>
<td>Various</td>
</tr>
<tr>
<td>Tornado Bus Co.</td>
<td>Private intercity</td>
<td>Various, Texas and Southeast U.S. destinations with daily connections to Mexico via Sistema Estrella Blanca Bus Lines</td>
</tr>
<tr>
<td>El Paso–Los Angeles Limousine Express</td>
<td>Private intercity</td>
<td>Various</td>
</tr>
<tr>
<td>Ómnibus de México/ Noreste</td>
<td>Private intercity</td>
<td>Various throughout Mexico to Ciudad Juárez, Ojinaga, Piedras Negras, Nuevo Laredo, Reynosa, Matamoros</td>
</tr>
<tr>
<td>Senda/Del Norte</td>
<td>Private intercity</td>
<td>Various throughout Northern Mexico and Southeast U.S. including Ciudad Juárez, Ciudad Acuña, Piedras Negras, Nuevo Laredo, Reynosa, Matamoros</td>
</tr>
<tr>
<td>Grupo Estrella Blanca/ Transportes Frontera</td>
<td>Private intercity</td>
<td>Various throughout Mexico including Ciudad Juárez, Ojinaga, Ciudad Acuña, Piedras Negras, Nuevo Laredo, Reynosa, Matamoros</td>
</tr>
</tbody>
</table>

### Table 3.4-2. Laredo/Coahuila/Nuevo León/Tamaulipas Region Transit Services\(^{70}\)

<table>
<thead>
<tr>
<th>Name</th>
<th>Type</th>
<th>Coverage</th>
</tr>
</thead>
<tbody>
<tr>
<td>El Metro</td>
<td>Fixed route, paratransit</td>
<td>City of Laredo and El Águila</td>
</tr>
<tr>
<td>Greyhound (Valley Transit Company and Americanos USA)</td>
<td>Private intercity</td>
<td>Laredo non-stop connections to San Antonio, Austin, Dallas, Houston, and McAllen</td>
</tr>
<tr>
<td>El Lift Paratransit Service</td>
<td>Paratransit</td>
<td>City of Laredo</td>
</tr>
<tr>
<td>El Águila Rural Transit</td>
<td>Fixed route, paratransit, demand response</td>
<td>Rural Webb County connections to Laredo’s fixed route system</td>
</tr>
<tr>
<td>Transporte Urbano de Nuevo Laredo (TUNL)</td>
<td>Fixed route</td>
<td>Municipio of Nuevo Laredo</td>
</tr>
<tr>
<td>Turimex Internacional (Grupo Senda)</td>
<td>Private intercity</td>
<td>Various</td>
</tr>
<tr>
<td>Tornado Bus Co.</td>
<td>Private intercity</td>
<td>Various, Texas and Southeast U.S. destinations with daily connections to Mexico via Sistema Estrella Blanca Bus Lines</td>
</tr>
<tr>
<td>El Expresso Bus Company</td>
<td>Private intercity</td>
<td>Various</td>
</tr>
</tbody>
</table>

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\(^{69}\) El Paso Destino MTP 2045, Greyhound Mexico, Estrella Blanca, Grupo Senda, Ómnibus de México (ODM), Vivabus Juárez

\(^{70}\) Laredo MTP 2045, Greyhound Mexico, Estrella Blanca, Grupo Senda, ODM, Transporte Urbano de Nuevo Laredo
Table 3.4-3. Rio Grande Valley/Tamaulipas Region Transit Services

<table>
<thead>
<tr>
<th>Name</th>
<th>Type</th>
<th>Coverage</th>
</tr>
</thead>
<tbody>
<tr>
<td>El Conejo</td>
<td>Private intercity</td>
<td>Various</td>
</tr>
<tr>
<td>Omnibus Express</td>
<td>Private intercity</td>
<td>Various</td>
</tr>
<tr>
<td>Grupo IAMS/ETN/Turistar</td>
<td>Private intercity</td>
<td>Northern Mexico from Aguas Calientes, Guadalajara, León, Monterrey, Puebla, Querétaro, Salamanca, Saltillo, San Luis Potosí, Tepotzotlán, Matamoros, Reynosa, to Nuevo Laredo</td>
</tr>
<tr>
<td>Ómnibus de México/Noreste</td>
<td>Private intercity</td>
<td>Various throughout Mexico to Ciudad Juárez, Ojinaga, Piedras Negras, Nuevo Laredo, Reynosa, Matamoros</td>
</tr>
<tr>
<td>Senda/Del Norte</td>
<td>Private intercity</td>
<td>Various throughout Northern Mexico and Southeast U.S. including Ciudad Juárez, Ciudad Acuña, Piedras Negras, Nuevo Laredo, Reynosa, Matamoros</td>
</tr>
<tr>
<td>Grupo Estrella Blanca/Transportes Frontera</td>
<td>Private intercity</td>
<td>Various throughout Mexico including Ciudad Juárez, Ojinaga, Ciudad Acuña, Piedras Negras, Nuevo Laredo, Reynosa, Matamoros</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Name</th>
<th>Type</th>
<th>Coverage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valley Metro</td>
<td>Flex route, fixed route</td>
<td>Lower Rio Grande Valley region</td>
</tr>
<tr>
<td>Metro Express (Red Line)</td>
<td>Fixed route express</td>
<td>Brownsville and McAllen</td>
</tr>
<tr>
<td>Metro McAllen</td>
<td>Fixed route, paratransit</td>
<td>City of McAllen</td>
</tr>
<tr>
<td>Brownsville Metro</td>
<td>Fixed route, paratransit, previously intercity (2013–2018)</td>
<td>City of Brownsville</td>
</tr>
<tr>
<td>Vaquero Express</td>
<td>Campus shuttle</td>
<td>University of Texas Rio Grande Valley (Brownsville, Edinburg, and Harlingen campuses)</td>
</tr>
<tr>
<td>JagExpress</td>
<td>Commuter, shuttle</td>
<td>South Texas College region</td>
</tr>
<tr>
<td>Island Metro</td>
<td>Fixed route</td>
<td>City of South Padre Island, Port Isabel, Laguna Heights</td>
</tr>
<tr>
<td>Transporte Urbano de Reynosa Tamps</td>
<td>Fixed route</td>
<td>Municipio of Reynosa</td>
</tr>
<tr>
<td>Sistema de Transporte Urbano de Matamoros</td>
<td>Fixed route</td>
<td>Municipio of Matamoros</td>
</tr>
<tr>
<td>Greyhound (through Valley Transit and Americanos)</td>
<td>Private intercity, airport shuttle, charter services</td>
<td>Nonstop connections from lower RGV to Austin, San Antonio, Houston, and various Mexico destinations</td>
</tr>
<tr>
<td>El Expreso Bus Company</td>
<td>Private intercity</td>
<td>Brownsville, Reynosa (MX), Roma, McAllen, and 9 states including Texas</td>
</tr>
<tr>
<td>Líneas Panamericanas</td>
<td>Private intercity, flex route</td>
<td>McAllen-Monterrey, Reynosa (MX), with connection to other areas in Mexico</td>
</tr>
<tr>
<td>Omnibus-Express</td>
<td>Private intercity</td>
<td>Brownsville, McAllen, and other points along the Rio Grande, in Mexico, Texas, and other states in the Southeast U.S.</td>
</tr>
<tr>
<td>Tornado Bus Co.</td>
<td>Private intercity</td>
<td>Various, Texas and Southeast U.S. destinations with daily connections to Mexico via Sistema Estrella Blanca Bus Lines</td>
</tr>
</tbody>
</table>

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71 RGV Metropolitan Transportation Plan 2045, Greyhound Mexico, Estrella Blanca, Grupo Senda, ODM, Transporte Urbano de Reynosa Tamps, Sistema de Transporte Urbano de Matamoros
Northbound

The number of northbound cross-border buses decreased by 3 percent, from 92,857 crossings to 90,325 crossings, between 1996 and 2019, with periods of sharp increases and decreases.\textsuperscript{72}

- Northbound buses crossing the border increased by 15,087 crossings, or 259 percent, in the El Paso/Santa Teresa/Chihuahua Region and by 4,847 crossings, or 13 percent, in the Laredo/Coahuila/Nuevo León/Tamaulipas Region. However, bus crossings declined by 22,466 crossings, or 45 percent, in the Rio Grande Valley/Tamaulipas Region. This is shown in Figure 3.4-31.

The majority of border crossings along the Texas-Mexico border experienced a decline in northbound bus volumes between 2008 and 2018. Bus crossings ceased entirely at several border crossings during this time.\textsuperscript{74}

- All but one border crossing in the El Paso/Santa Teresa/Chihuahua Region experienced declines in northbound bus movements between 2008 and 2018. Presidio, the single border crossing that experienced increases, grew by 753 percent, with an additional 1,100 crossings.

\textsuperscript{72} BTS Border Entry Data, 1996–2019.

\textsuperscript{73} BTS Border Entry Data, 1996–2019.

\textsuperscript{74} U.S. CBP, 2008–2018. CBP bus crossing volumes by border crossing are only available through 2018.
In the Laredo/Coahuila/Nuevo León/Tamaulipas Region, northbound bus crossings at Camino Real International increased by 1,000 bus crossings, a growth of 66 percent.

Northbound bus volumes declined at all border crossings in the Rio Grande Valley/Tamaulipas Region. Mc-Allen-Hidalgo International experienced the largest decline with 12,906 fewer crossings – a 39 percent decrease. Meanwhile Roma–Ciudad Miguel Aleman experienced the fastest decline with 680 fewer crossings – a 65 percent decrease.

Southbound

Due to limited data reporting of southbound volumes, southbound bus volumes are only reported here by individual border crossing. Additionally, years of available southbound data vary by border crossing.

Juarez-Lincoln processed 36,392 buses southbound in 2019, with crossings increasing by 2,537, or 7.5 percent, over 2004.

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75 U.S. CBP, 2008–2018. CBP bus crossing volumes by border crossing are only available through 2018.
76 U.S. CBP, 2008–2018. CBP bus crossing volumes by border crossing are only available through 2018.
77 U.S. CBP, 2008–2018. CBP bus crossing volumes by border crossing are only available through 2018.
Southbound bus crossings grew by 23 percent, or 805 crossings, at Camino Real Intl. between 2000 and 2018.

Between 1998 and 2016, Free Trade Bridge experienced 807 fewer crossings – a 97 percent decline, while Gateway International experienced an additional 4,316 crossings – a 141 percent increase.

Veterans International at Los Tomates experienced an 8 percent decline in southbound bus volumes between 1999 and 2016, with 232 fewer crossings.

Over the last few years, southbound pedestrian volumes at Laredo-Colombia Solidarity increased from 40 crossings in 2016 to over 2,100 crossings in 2019.

Figure 3.4-35. Texas-Mexico Southbound Buses by Border Crossing (1990–2019)

3.4.5 Summary

The highway and roadway network and 28 vehicle crossings along the Texas-Mexico border and the Santa Teresa crossing support the movement of people and goods—including buses, bicycles, pedestrians, POVs, and CMVs. The Texas-Mexico border processed over 4.6 million CMVs, 32.8 million POVs, and 20 million pedestrians northbound in 2019, and the highway and roadway network is a critical component to facilitating the safe, efficient, and reliable movement of people and goods.

3.5 Freight Rail Network

In 2015, the West Rail Bridge in Brownsville became the first rail bridge built across the U.S.-Mexico border in more than 100 years.
- Five rail crossings along the Texas-Mexico border facilitate trade through North America.
- Intermodal rail yards in El Paso, Laredo, and Brownsville support multimodal freight movements. No intermodal facilities are available in the Mexico border region.
- Unified Cargo Processing (UCP) in Laredo creates efficiency in cross-border rail trade. UCP is a joint program between CBP and SAT in which joint cargo inspections are conducted to reduce wait and clearance times for cargo crossing the U.S.-Mexico border.
- There are 3,311 rail track miles in Texas-Mexico border counties and municipios. The El Paso/Santa Teresa/Chihuahua Region has 1,844 miles, while the Laredo/Coahuila/Nuevo León/Tamaulipas Region has 944 miles and the Rio Grande Valley/Tamaulipas Region has 524 miles of rail track.
- Texas-Mexico border trade by rail rose 59 percent, or $27.9 billion, between 2006 and 2019, driven mainly by northbound increases, which grew by 81 percent, or $22 billion. Southbound cargo movements increased by 30 percent, or $5.8 billion, in the same time period.
- Between 1996 and 2019, northbound railcars increased 305 percent, from 251,769 to 1,020,921 railcars. The El Paso/Santa Teresa/Chihuahua Region experienced a 415 percent growth with 97,282 added railcars, followed by an increase of 351 percent, or 623,447 railcars, in the Laredo/Coahuila/Nuevo León/Tamaulipas Region. Northbound railcars increased by 95 percent, or 48,423 railcars, in the Rio Grande Valley/Tamaulipas Region.

Figure 3.5-1. Texas-Mexico Borderwide Rail Track Miles by Region (2020)\(^7\)

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\(^7\) BTS 2020 GIS Layers.
3.5.1 Cross-border Rail Trade

Between 2006 and 2019, Texas-Mexico rail trade rose by 59 percent, or $27.9 billion. Northbound movements increased by 81 percent, or $22 billion, and southbound trade increased 30 percent, or $5.8 billion.

- The value of trade conveyed by rail at the Laredo POE increased by 38.5 percent, or $12.3 billion, between 2006 and 2019, despite a 41 percent decrease after the Great Recession in 2009.
Meanwhile, at the Eagle Pass POE, the value of cross-border rail trade grew by 154 percent, or $13 billion.

The Brownsville POE experienced a 39 percent decrease in the value of cross-border rail trade during this period – a decline of $587 million.

The value of trade at the El Paso POE increased by 63 percent, or $3.2 billion.

The Presidio POE processed $11.4 million in trade in 2007, prior to being destroyed by a fire in 2008.

3.5.2 Northbound Rail Cars

Between 1996 and 2019, northbound rail cars from Mexico to Texas increased by 305.5 percent from 251,769 to 1,020,921 railcars.

- The El Paso/Santa Teresa/Chihuahua Region’s northbound rail car crossings rose by 415 percent, or 97,282 crossings.
- In the Laredo/Coahuila/Nuevo León/Tamaulipas Region, the number of northbound rail cars increased by 351 percent, or 623,447, between 1996 and 2019. The Laredo POE processes the most northbound rail cars crossing the border.
- The Rio Grande Valley/Tamaulipas Region, Brownsville POE experienced a 95 percent growth, with an additional 48,423 northbound rail car crossings.

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80 BTS TransBorder Freight Data (2006–2019), values adjusted to 2019 dollars. Note: BTS TransBorder data manually corrected, which was showing rail values for Del Rio, Hidalgo, Progreso, Rio Grande City, Roma, Fabens, Presidio, and Santa Teresa POEs.

81 BTS TransBorder Freight Data (2006–2019), values adjusted to 2019 dollars. Note: BTS TransBorder data manually corrected, which was showing rail values for Del Rio, Hidalgo, Progreso, Rio Grande City, Roma, Fabens, Presidio, and Santa Teresa POEs.
### 3.6 Aviation System

Highlights of the aviation system shown in Figure 3.6-1 include the following:

- The map below shows airports with direct connections to Texas and Mexico. Fifteen airports in Texas have regularly scheduled flights to 31 airports throughout Mexico. The aviation system enables business and personal travel and cargo movement on numerous U.S. and Mexican carriers.

- Texas-Mexico passenger air travel rose faster than air cargo between 1990 and 2019. During this time, Texas-Mexico passenger air travel rose 123 percent while air cargo rose only 9 percent.

- Laredo International Airport provides binational customs operations.

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Figure 3.6-1. Existing Texas and Mexico Aviation System

Figure 3.6-2. Texas-Mexico Passenger Aviation Travel Patterns (1990–2019)\textsuperscript{84}

Figure 3.6-3. Texas-Mexico Cross-border Aviation Trade Value (2006–2019)\textsuperscript{85}

\textsuperscript{84} Source: USDOT BTS, Air Carrier Statistics (1990–2019).

\textsuperscript{85} BTS TransBorder Freight Data (2006–2019), values adjusted to 2019 dollars.
### 3.7 Pipeline Network

The pipeline network, shown in Figure 3.7-1, across the Texas-Mexico border is predominantly used for outflows to Mexico. The pipeline network includes:

- Thirteen import and export pipeline terminals along the border and are most concentrated along the Gulf of Mexico near seaports.
- 5,500 pipeline miles in the Texas-Mexico border region, including 4,000 miles of natural gas pipelines, 400 miles of crude oil pipelines, and 1,100 miles of other pipelines.
- The Texas-Mexico border trade by pipeline rose 400 percent between 2006 and 2019, driven by southbound increases. Southbound trade increased by $3.8 billion, or 423 percent, while northbound trade increased by $56.7 million, or 99 percent.

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**Figure 3.7-1. Texas-Mexico Cross-border Pipeline Trade Value (2006–2019)**

- Santa Teresa
- El Paso
- Del Rio
- Eagle Pass
- Laredo
- Rio Grande City
- Hidalgo
- Edinburg International Use Fee Airport - Texas
- Progreso
- Valley Intl Airport, Harlingen, Texas
- Brownsville
- Dallas/Ft. Worth Airport - Texas
- Houston-Galveston Customs District n.e.c.
- Dallas/Ft. Worth Customs District n.e.c.
- Houston - Texas
- Port Arthur Customs District n.e.c.

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86 BTS TransBorder Freight Data (2006–2019), values adjusted to 2019 dollars. Note: not elsewhere included (n.e.c.)

Figure 3.7-2 Existing Texas and Mexico Pipeline Network (2018)

Figure 3.7-3. Texas-Mexico Cross-border Pipeline Trade Value by POE (2006–2019)\textsuperscript{88}

\textsuperscript{88} BTS TransBorder Freight Data (2006–2019), values adjusted to 2019 dollars.

Texas-Mexico Border: Past and Present
3.8 Maritime System

Between 2006 and 2019, maritime trade between Texas and Mexico seaports rose 111 percent southbound and declined 63 percent northbound. The maritime system includes:

- Thirteen Mexico seaports and eight Texas seaports\(^8^9\) support maritime trade between Mexico and Texas. The majority of maritime trade is primarily bidirectional movement of petroleum products.
- Maritime trade across the Gulf of Mexico alleviates congestion at land border crossings along the Texas-Mexico border.
- One liquid cargo barge can transport the same amount of freight as 46 rail cars and 144 trucks. Multimodal connections are also important for transloading between maritime, freight rail, and truck modes.

**Figure 3.8-1. Existing Texas and Mexico Seaports\(^9^0\)**

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\(^8^9\) Based on Transearch analysis 2015 and supplemented by stakeholder comments.

\(^9^0\) Seaports represented in the map are those with direct trade between Texas and Mexico based on Transearch 2015 data, supplemented by stakeholder comments.
3.9 Free Trade Zones

Free Trade Zones and programs facilitate international trade by streamlining foreign trade processes and payments.

- Eight U.S. free trade zones, known in the U.S as foreign trade zones, in the Texas border region exempt foreign merchandise from the usual formal CBP entry procedures and payments of duties until it enters CBP territory for domestic consumption.

- Six strategic fiscal areas in Mexico with several locations that allow the introduction of goods into the premise without taxes or compensatory fees.

- Mexico’s Northern Border Free Zone spans the U.S.-Mexico border, offering reduced income tax and value added tax, approved gasoline prices, and increased wages. The Free Zone currently includes 26 municipios in the Mexican border region. The program has extended through 2024.

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92 BTS TransBorder Freight Data (2006–2019), values adjusted to 2019 dollars. Note: BTS TransBorder data manually corrected, which was showing maritime values for Del Rio, Eagle Pass, Laredo, Hidalgo, El Paso, and Santa Teresa POEs; Dallas/Ft. Worth Airport values also manually classified as Dallas/Ft. Worth Customs District n.e.c. The Dallas/Ft. Worth Customs District includes Port of Tulsa, Oklahoma.
3.10 System Performance

This section assesses the Texas-Mexico system performance for roadway and rail from past to present through the three BTMP performance goals: Mobility and Reliability, Safety and Security, and Asset Preservation.

3.10.1 Mobility and Reliability

The Mobility and Reliability goal of the BTMP is to reduce congestion and improve system efficiency and performance on the Texas-Mexico transportation system. This can be accomplished by improving cross-border travel time reliability and improving the capacity of the system to accommodate future growth. Mobility and reliability are measured based on border and roadway delays.
Border Delay – Total Crossing Times

- **Commercial vehicles (CMVs):** While median crossing times typically remained under an hour across the border region, 90th percentile crossing times\(^{93}\) frequently exceeded one hour, even reaching two hours at some border crossings.

- **Passenger vehicles (POVs):** Median crossing times typically remained under half an hour across the border region, but 90th percentile crossing times often exceed an hour.

- **Northbound crossing times** exceeded southbound crossing times across modes and border crossings.

- **Bicycles/pedestrians:** While total border crossing times are unavailable for bicycles/pedestrians, trends in border crossing volumes suggest bicycle/pedestrian crossing times are lower than POV times.

Total crossing times are used to measure border delays for POV and CMV lanes across all 28 Texas-Mexico vehicle crossings and the Santa Teresa crossings in 2019. Total crossing times were developed using a combination of Texas A&M Transportation Institute (TTI) Border Crossing Information System (BCIS) data and INRIX 2019 Global Positioning System (GPS) probe data from vehicles.

TTI BCIS automatically collects crossing time data at eight northbound CMV crossings\(^{94}\) and three POV crossings\(^{95}\) between Mexico and the U.S. INRIX 2019 data was developed to estimate crossing times for the remaining (non-BCIS) crossings.

**CMV Crossing Times**

**CMV Crossing Time Distributions**

- **Southbound CMV crossing times** were typically less than 30 minutes in 2019.

- **Northbound CMV crossing times** are typically between 1 and 2 hours. These border crossing delays add to the cost of cross-border trade.

Across the border, just over half of northbound crossing times remain under 30 minutes, while 8 percent of crossing times exceed an hour. In the Laredo/Coahuila/Nuevo León/Tamaulipas Region, northbound crossing times usually remain under 30 minutes and almost always remain under an hour. In the El Paso/Santa Teresa/Chihuahua and Rio Grande Valley/Tamaulipas Regions, 75 percent of crossing times remain under an hour, while 25 percent of crossings can reach up to 90 minutes. Southbound crossing times for CMVs rarely exceed 30 minutes.

\(^{93}\) 90 percent of all crossings experience border crossing times below this number.

\(^{94}\) Santa Teresa, Bridge of the Americas, Ysleta-Zaragoza, Camino Real International, Laredo-Colombia Solidarity, World Trade Bridge, Pharr-Reynosa International Bridge on the Rise, Veterans International at Los Tomates.

\(^{95}\) Paso del Norte (northbound only), Good Neighbor (northbound only), Ysleta-Zaragoza (northbound and southbound).
El Paso/Santa Teresa/Chihuahua Region

In the El Paso/Santa Teresa/Chihuahua Region, the BCIS data source tracks total border crossing times for Santa Teresa, Bridge of the Americas, and Ysleta-Zaragoza northbound movements. For southbound movements at all border crossings, and the remaining northbound movements where there are data gaps, the BTMP uses GPS/location-based service (LBS) data to illustrate border crossing times.

- Over 92 percent of the time, northbound CMV border crossing times remain under an hour at Santa Teresa and Presidio border crossings. In worst cases, crossing times may exceed 90 minutes.
- At Bridge of the Americas and Ysleta-Zaragoza, northbound CMV crossing times remain under 90 minutes over 99 percent of the time, with most crossings falling under 30 minutes. However, crossing times may exceed 120 minutes.
- With the exception of Presidio, southbound CMV crossing times do not exceed 30 minutes in the El Paso/Santa Teresa/Chihuahua Region.
Laredo/Coahuila/Nuevo León/Tamaulipas Region

In the Laredo/Coahuila/Nuevo León/Tamaulipas Region, the BCIS data source tracks total border crossing times for Camino Real International, Laredo-Colombia Solidarity, and World Trade Bridge northbound movements. For southbound movements at all border crossings, and the remaining northbound movements where there are data gaps, the BTMP uses GPS/LBS data to illustrate border crossing times.

- Northbound CMV crossing times rarely exceed 30 minutes at Camino Real International.
- Over 96 percent of the time, northbound CMV crossings remain under half an hour at Laredo-Colombia Solidarity.
- While northbound CMV crossing times typically remain under 90 minutes at Del Rio–Ciudad Acuña International, total crossing time could exceed 90 minutes.
- Over 96 percent of the time, CMV crossing times remain under an hour at World Trade Bridge, most of which do not exceed 30 minutes. In worst cases, crossing times may exceed 120 minutes.
- Southbound CMV crossing times rarely exceed 30 minutes in the Laredo/Coahuila/Nuevo León/Tamaulipas Region.

Rio Grande Valley/Tamaulipas Region

In the Rio Grande Valley/Tamaulipas Region, the BCIS data source tracks total border crossing times for Pharr-Reynosa International Bridge on the Rise and Veterans International at Los Tomates northbound movements. For southbound movements at all border crossings, and the remaining northbound movements where there are data gaps, the BTMP uses GPS/LBS data to illustrate border crossing times.

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100 INRIX 2019; TTI BCIS 2019
101 INRIX 2019
At most border crossings in the Rio Grande Valley/Tamaulipas Region, northbound CMV crossing times remain below 30 minutes at least 70 percent of the time.

At Rio Grande City–Camargo, Progreso International, and Free Trade, northbound CMV total crossing times could exceed 90 minutes, but remain under 120 minutes.

Total northbound CMV crossing times remain below half an hour at Pharr-Reynosa International Bridge on the Rise 63 percent of the time. Thirteen percent of crossings exceed 90 minutes, over half of which may exceed 120 minutes.

Southbound CMV crossing times remain low in the Rio Grande Valley/Tamaulipas Region, with Free Trade Bridge and Rio Grande City–Camargo as the only border crossings where crossing times may exceed half an hour.

CMV Crossing Times – by Time of Day

- CMV crossing times are highest during the early afternoons across all three regions, with 90th percentile borderwide crossing times reaching 94 minutes at 3 p.m. in 2019.

- Meanwhile, 90th percentile crossing times for northbound CMVs reached approximately 107 minutes in the El Paso/Santa Teresa/Chihuahua Region, 60 minutes in the Laredo/Coahuila/Nuevo León/Tamaulipas Region, and 116 minutes in the Rio Grande Valley/Tamaulipas Region.

- For southbound CMVs, 90th percentile crossing times remained under 16 minutes borderwide and across border regions.

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102 INRIX 2019, TTI BCIS 2019
103 INRIX 2019
El Paso/Santa Teresa/Chihuahua Region

In the El Paso/Santa Teresa/Chihuahua Region, the BCIS data source tracks total border crossing times for Santa Teresa, Bridge of the Americas, and Ysleta-Zaragoza northbound movements. For southbound movements at all border crossings, and the remaining northbound movements where there are data gaps, the BTMP uses GPS/LBS data to illustrate border crossing times.

- At Santa Teresa, 90th percentile northbound crossing times are highest in the afternoon, reaching 43 minutes around noon.
- While typical northbound crossing times reach up to 53 minutes at Bridge of the Americas, highest expected crossing times can exceed 100 minutes.
- Ysleta-Zaragoza sees typical northbound crossing times of up to 73 minutes in the afternoon and early evening. However, highest expected crossing times can reach almost two hours at 115 minutes.
- Northbound crossing times at Presidio can reach up to 90 minutes between 10 and 11 p.m.

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104 INRIX 2019, TTI BCIS 2019
105 INRIX 2019, TTI BCIS 2019
106 INRIX 2019, TTI BCIS 2019
107 INRIX 2019, TTI BCIS 2019
Across all border crossings in the El Paso/Santa Teresa/Chihuahua Region, typical and highest expected northbound crossing times exceed southbound crossing times.

**Figure 3.10-13. El Paso/Santa Teresa/Chihuahua Region Northbound 50th Percentile Border Crossing Times by Border Crossing – CMV (2019)**

**Figure 3.10-14. El Paso/Santa Teresa/Chihuahua Region Northbound 90th Percentile Border Crossing Times by Border Crossing – CMV (2019)**

**Figure 3.10-15. El Paso/Santa Teresa/Chihuahua Region Southbound 50th Percentile Border Crossing Times by Border Crossing – CMV (2019)**

**Figure 3.10-16. El Paso/Santa Teresa/Chihuahua Region Southbound 90th Percentile Border Crossing Times by Border Crossing – CMV (2019)**

In the Laredo/Coahuila/Nuevo León/Tamaulipas Region, the BCIS data source tracks total border crossing times for Camino Real International, Laredo-Colombia Solidarity, and World Trade bridge northbound movements. For southbound movements at all border crossings, and the remaining northbound movements where there are data gaps, the BTMP uses GPS/LBS data to illustrate border crossing times.

- Typical northbound CMV crossing times at Del Rio–Ciudad Acuña International reach 44 minutes in the evening, while highest expected crossing times exceed an hour.
- At World Trade Bridge, northbound CMV crossing times are highest in the early afternoon, with typical crossing times at 39 minutes and highest expected crossing times reaching 69 minutes.

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108 INRIX 2019, TTI BCIS 2019
109 INRIX 2019, TTI BCIS 2019
110 INRIX 2019, TTI BCIS 2019
111 INRIX 2019, TTI BCIS 2019
• 90th percentile northbound CMV crossing times reach 15 minutes at Camino Real International and 30 minutes at Laredo-Colombia Solidarity.

• Across all border crossings in the Laredo/Coahuila/Nuevo León/Tamaulipas Region, typical and highest expected northbound CMV crossing times exceed southbound crossing times.

**Figure 3.10-17. Laredo/Coahuila/Nuevo León/ Tamaulipas Region Northbound 50th Percentile Border Crossing Times by Border Crossing – CMV (2019)**

**Figure 3.10-18. Laredo/Coahuila/Nuevo León/ Tamaulipas Region Northbound 90th Percentile Border Crossing Times by Border Crossing – CMV (2019)**

**Figure 3.10-19. Laredo/Coahuila/Nuevo León/ Tamaulipas Region Southbound 50th Percentile Border Crossing Times by Border Crossing – CMV (2019)**

**Figure 3.10-20. Laredo/Coahuila/Nuevo León/ Tamaulipas Region Southbound 90th Percentile Border Crossing Times by Border Crossing – CMV (2019)**

**Rio Grande Valley/Tamaulipas Region**

In the Rio Grande Valley/Tamaulipas Region, the BCIS data source tracks total border crossing times for Pharr-Reynosa International Bridge on the Rise and Veterans International at Los Tomates northbound movements. For southbound movements at all border crossings, and the remaining northbound movements where there are data gaps, the BTMP uses GPS/LBS data to illustrate border crossing times.

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112 INRIX 2019, TTI BCIS 2019
113 INRIX 2019, TTI BCIS 2019
114 INRIX 2019, TTI BCIS 2019
115 INRIX 2019, TTI BCIS 2019
- At Rio Grande City–Camargo, typical northbound CMV crossing times can exceed an hour at night, with highest expected crossing times reaching up to 82 minutes.
- Highest expected northbound CMV crossing times at Pharr-Reynosa International Bridge on the Rise exceed 1 hour at most times of the day, with crossing times reaching 168 minutes in the evening.
- Typical northbound CMV crossing times remain below half an hour at Roma–Ciudad Miguel Alemán, Progreso International, and Veterans International at Los Tomates. However, 90th percentile times can reach up to 46 minutes, 91 minutes, and 43 minutes, respectively.
- Typical and highest expected northbound CMV crossing times can exceed an hour at Free Trade Bridge in the evening.
- Across all border crossings in the Rio Grande Valley/Tamaulipas Region, typical and highest expected northbound CMV crossing times exceed southbound crossing times.
POV Crossing Times

POV Crossing Times – Distributions

- Borderwide, POV crossing time distributions are higher for northbound crossings compared to southbound crossings. One fourth of borderwide northbound POV crossing times are higher than 30 minutes, while only 0.01 percent of borderwide southbound POV crossing times exceed 30 minutes.

- In the Laredo/Coahuila/Nuevo León/Tamaulipas and Rio Grande Valley/Tamaulipas Regions, almost all northbound crossing times remain under an hour, but approximately 5 percent exceed 60 minutes. In the El Paso/Santa Teresa/Chihuahua Region, 78 percent of crossing times remain under an hour, while 21 percent of crossings can reach up to 90 minutes.

- Across all regions, southbound crossing times for POVs rarely exceed 30 minutes.

El Paso/Santa Teresa/Chihuahua Region

In the El Paso/Santa Teresa/Chihuahua Region, the BCIS data source tracks total border crossing times for Paso del Norte and Good Neighbor northbound POV movements and Ysleta-Zaragoza northbound and southbound POV movements. For all other POV border crossings, the BTMP uses GPS/LBS data to illustrate border crossing times.

- Northbound POV crossing times can exceed one hour at five border crossings—Presidio, Santa Teresa, Paso del Norte, Ysleta-Zaragoza, and Good Neighbor.

- Northbound POV crossing times typically do not exceed 30 minutes at Good Neighbor.

- At Santa Teresa and Bridge of the Americas, northbound POV crossing times remain below half an hour over seven out of ten times.
At Tornillo-Guadalupe International Bridge,¹²² northbound POV border crossings do not exceed an hour, with one third of crossing times remaining under half an hour.

Over 96 percent of northbound POV crossing times at Ysleta-Zaragoza and Paso del Norte remain under an hour. In worst cases, crossing times may exceed 90 minutes, a small share of which may exceed 120 minutes.

With the exception of Ysleta-Zaragoza, southbound POV crossing times do not exceed 30 minutes in the El Paso/Santa Teresa/Chihuahua Region.

Laredo/Coahuila/Nuevo León/Tamaulipas Region

In the Laredo/Coahuila/Nuevo León/Tamaulipas Region, the BCIS data source is unavailable for all POV movements. Instead, the BTMP uses GPS/LBS data to illustrate border crossing times.

- Northbound POV crossing times remain under half an hour at Camino Real International and Laredo-Colombia Solidarity.
- Northbound POV crossing times at Gateway to the Americas fall between 30 and 60 minutes.
- Over 90 percent of the time, northbound POV crossings at Lake Amistad Dam remain under 30 minutes. Those crossing times that exceed 30 minutes can reach up to 90 minutes.
- Northbound POV total crossing times rarely exceed one hour at Del Rio–Ciudad Acuña International and Eagle Pass I.
- Two thirds of northbound POV crossing times remain under 30 minutes at Juárez-Lincoln. However, one in ten crossings has a crossing time that exceeds 60 minutes, with the possibility of reaching 120 minutes.
- With the exception of Eagle Pass I, southbound POV crossing times do not exceed 30 minutes in the Laredo/Coahuila/Nuevo León/Tamaulipas Region.

¹²² Note: Tornillo-Guadalupe International Bridge is currently closed.
¹²³ INRIX 2019; TTI BCIS 2019
¹²⁴ INRIX 2019; TTI BCIS 2019
Figure 3.10-29. Laredo/Coahuila/Nuevo León/ Tamaulipas Region Northbound Crossing Time Distribution by Border Crossing – POV (2019)

Figure 3.10-30. Laredo/Coahuila/Nuevo León/ Tamaulipas Region – Southbound Crossing Time Distribution by Border Crossing (POV)

**Rio Grande Valley/Tamaulipas Region**

In the Rio Grande Valley/Tamaulipas Region, the BCIS data source is unavailable for all POV movements. Instead, the BTMP uses GPS/LBS data to illustrate border crossing times.

- Northbound POV border crossing times typically remain under one hour at Rio Grande Valley/Tamaulipas Region border crossings, with the majority of crossing times falling below 30 minutes.
- Northbound POV crossing times can reach up to 90 minutes at eight border crossings, particularly at Anzalduas International, McAllen-Hidalgo, and Gateway International.
- Though for less than 1 percent of crossings, northbound POV crossing times can reach up to 120 minutes at two border crossings: Anzalduas International and McAllen-Hidalgo International.
- Northbound POV border crossing times at Veterans International at Los Tomates do not exceed 30 minutes.
- The majority of northbound POV crossing times fall between 30 and 60 minutes at Los Ebanos Ferry and Gateway International.
- Southbound POV crossing times do not exceed 30 minutes in the Rio Grande Valley/Tamaulipas Region.

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125 INRIX 2019
126 INRIX 2019
Northbound POVs crossing times are stable across most of the day across all three regions. In 2019, 90th percentile borderwide crossing times reached 46 minutes.

Meanwhile, 90th percentile crossing times for northbound POVs reached 46 minutes in the El Paso/Santa Teresa/Chihuahua Region, 59 minutes in the Laredo/Coahuila/Nuevo León/Tamaulipas Region, and 57 minutes in the Rio Grande Valley/Tamaulipas Region.

For southbound POVs, 90th percentile crossing times remained under 28 minutes borderwide.
El Paso/Santa Teresa/Chihuahua Region

In the El Paso/Santa Teresa/Chihuahua Region, the BCIS data source tracks total border crossing times for Paso del Norte and Good Neighbor northbound POV movements and Ysleta-Zaragoza northbound and southbound POV movements. For all other POV border crossings, the BTMP uses GPS/LBS data to illustrate border crossing times. Due to limited data reporting, some border crossing times are shown as points on the following graphs.

- Typical northbound crossing times exceed 40 minutes at Ysleta-Zaragoza, Tornillo-Guadalupe International Bridge, and Presidio border crossings. Meanwhile, highest expected crossing times can reach up to 47 minutes at Tornillo-Guadalupe International Bridge, 64 minutes at Presidio, and 77 minutes at Ysleta-Zaragoza.
- Paso del Norte sees typical northbound crossing times exceed 30 minutes and highest expected crossing times exceed 50 minutes between 7 a.m. and 10 p.m.
- Typical northbound crossing times remain below half an hour at Santa Teresa, Good Neighbor and Bridge of the Americas. However, 90th percentile crossing times can reach 66 minutes, 28 minutes, and 39 minutes, respectively.
- Highest expected southbound crossing times remain under 16 minutes at all but one border crossing in the El Paso/Santa Teresa/Chihuahua Region. Ysleta-Zaragoza sees typical southbound crossing times reach 19 minutes between 6 and 7 p.m., during which 90th percentile crossing times can exceed 30 minutes. However, highest expected southbound crossing times are the longest between 3 to 5 a.m., during which crossing times can reach 44 minutes.

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131 INRIX 2019, TTI BCIS 2019
132 INRIX 2019, TTI BCIS 2019
133 Note: Tornillo-Guadalupe International Bridge is currently closed.
Laredo/Coahuila/Nuevo León/Tamaulipas Region

In the Laredo/Coahuila/Nuevo León/Tamaulipas Region, the BCIS data source is unavailable for all POV movements. Instead, the BTMP uses GPS/LBS data to illustrate border crossing times. Due to limited data reporting, some border crossing times are shown as points on the following graphs.

- Typical northbound POV crossing times can exceed half an hour at Del Rio–Ciudad Acuña International, Eagle Pass, and Juárez-Lincoln. The 90th percentile crossing times at Del Rio–Ciudad Acuña International can reach 53 minutes. Meanwhile, highest expected northbound POV crossing times exceed 40 minutes throughout most of the day at Eagle Pass and Juárez-Lincoln, reaching up to 56 and 69 minutes, respectively.

- Crossing times at Gateway to the Americas reach 46 minutes.

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134 INRIX 2019, TTI BCIS 2019
135 INRIX 2019, TTI BCIS 2019
136 INRIX 2019, TTI BCIS 2019
137 INRIX 2019, TTI BCIS 2019
- Lake Amistad Dam sees steady typical northbound crossing times—between 18 and 25 minutes. However, 90th percentile crossing times can exceed an hour at 3 p.m.
- Typical northbound crossing times remain below 15 minutes and highest expected northbound crossing times remain below 20 minutes at Camino Real International and Laredo-Colombia Solidarity border crossings.
- Across all border crossings in the Laredo/Coahuila/Nuevo León/Tamaulipas Region, typical and highest expected northbound crossing times exceed southbound crossing times.

Figure 3.10-41. Laredo/Coahuila/Nuevo León/Tamaulipas Region Northbound 50th Percentile Border Crossing Times by Border Crossing – POV (2019)\textsuperscript{138}

Figure 3.10-42. Laredo/Coahuila/Nuevo León/Tamaulipas Region Northbound 90th Percentile Border Crossing Times by Border Crossing – POV (2019)\textsuperscript{139}

Figure 3.10-43. Laredo/Coahuila/Nuevo León/Tamaulipas Region Southbound 50th Percentile Border Crossing Times by Border Crossing – POV (2019)\textsuperscript{140}

Figure 3.10-44. Laredo/Coahuila/Nuevo León/Tamaulipas Region Southbound 90th Percentile Border Crossing Times by Border Crossing – POV (2019)\textsuperscript{141}

\textsuperscript{138} INRIX 2019
\textsuperscript{139} INRIX 2019
\textsuperscript{140} INRIX 2019
\textsuperscript{141} INRIX 2019
**Rio Grande Valley/Tamaulipas Region**

In the Rio Grande Valley/Tamaulipas Region, the BCIS data source is unavailable for all POV movements. Instead, the BTMP uses GPS/LBS data to illustrate border crossing times.

- Free Trade Bridge sees northbound POV crossing times reach an hour and Pharr-Reynosa International Bridge on the Rise sees northbound crossing times reach 44 minutes.
- Typical northbound POV crossing times remain under 36 minutes at McAllen-Hidalgo International. However, 90th percentile crossing times near or exceed 50 minutes between 8 a.m. and 2 a.m., with crossing times reaching 75 minutes at 1 a.m.
- Highest typical POV crossing times occur at 4 p.m. at Donna International, reaching 43 minutes, and at Progreso International, reaching 46 minutes. In the evening, 90th percentile crossing times exceed an hour at these two border crossings.
- At Gateway to the Americas, typical northbound POV crossing times can reach 56 minutes at 2 p.m., with highest expected crossing times reaching 65 minutes.
- Typical northbound POV crossing times generally remain under half an hour at B&M, but can reach 36 minutes in the early morning. Meanwhile, highest expected crossing times exceed 40 minutes in the afternoon and evening.
- At Roma–Ciudad Miguel Alemán, typical northbound POV crossing times exceed half an hour between 1 and 7 p.m. Meanwhile, highest expected crossing times exceed 40 minutes from 9 a.m. to 9 p.m.
- Lake Falcon Dam sees typical northbound POV crossing times between 17 and 27 minutes. However, 90th percentile crossing times can exceed 40 minutes at 2 p.m.
- At Los Ebanos Ferry, 90th percentile northbound POV crossing times reach 58 minutes at 3 p.m.
- Typical northbound POV crossing times reach up 46 minutes in the evening at Anzalduas International, during which the 90th percentile POV crossing time reaches 74 minutes. However, the crossing’s highest expected crossing time reaches 82 minutes at 9 a.m.
- Northbound POV crossing times at Rio Grande City–Camargo remain under 34 minutes, while crossing times at Veterans International at Los Tomates remain below 20 minutes.
Bike/Pedestrian Crossing Times

Total border crossing times are unavailable for bikes/pedestrians. However, border crossing volumes indicate bike/pedestrian crossing times are lower than POV crossing times. This has led to increased share of people crossing on foot rather than through POVs.\textsuperscript{146}

\textsuperscript{142} INRIX 2019
\textsuperscript{143} INRIX 2019
\textsuperscript{144} INRIX 2019
\textsuperscript{145} INRIX 2019
### Roadway Delay (Congestion)

- **Roadway congestion** in the Texas-Mexico border region is **concentrated in the urban areas and around border crossings.**
- Border delays generate congestion on Texas and Mexico roadways beyond border crossings.
- The El Paso/Santa Teresa/Chihuahua Region experiences highest congestion on the I-10 corridor (in El Paso) and Federal Highway (FH) 45 (in Ciudad Juárez).
- The Laredo/Coahuila/Nuevo León/Tamaulipas Region’s most congested corridors are north-south I-35 (in Laredo) and MEX 85 (in Nuevo Laredo). I-27 and I-69 in Laredo, along with its connecting corridors, also experiences congestion.
- The Rio Grande Valley/Tamaulipas Region’s most significant congestion occurs on I-69C and I-69E and on I-2.

Detailed congestion information and maps can be found in **Chapter 5.**

### 3.10.2 Safety and Security

The BTMP’s Safety and Security Goal is to improve Texas-Mexico multimodal transportation safety and security. The objectives associated with this goal are to reduce the number of crashes on the transportation system that result in fatalities and injuries, including those at POEs, and to enhance the secure movement of people and goods. Safety issues are measured based on roadway crashes and rail incidents.

### Roadway Crashes

- **Corridors and local connectors to border crossings have higher crash rates across the Texas border region.** This may be attributable to facility age and design, as many roadways were designed to accommodate lower traffic volumes and do not effectively accommodate the size of today’s CMVs, interactions of CMVs and POVs on the road, highway-rail at-grade crossings, and other issues.

- **On the Texas-side of the border,** roadway crashes involving injuries or fatalities increased by **1 percent between 2015 and 2019.** Fatality rates and injury rates as a share of total crashes declined over the same time period. Fatalities are rare, occurring in 0.41 percent of all crashes as of 2019. Approximately 40 percent of crashes result in injury as of 2019.

- **On the Mexico-side of the border,** roadway crashes involving fatalities or injuries declined by **16 percent between 2010 and 2019.** Fatalities occur in approximately 1 percent of all crashes, and injuries occur in approximately 18 percent of all crashes as of 2019. Note: There may be underreporting of minor highway crashes.
Rail Incidents

- In the Texas border region between 1997 and 2019, rail incidents resulting in casualties (injuries or fatalities) declined 62 percent. In 2019, casualties associated with on-duty rail employees made up 44 percent rail incidents resulting in casualty in the Texas border region. Casualty to trespassers made up 31 percent of rail incidents resulting in casualty that same year.

- The majority of total Texas borderwide rail incidents occur in El Paso and Webb counties.

- In Mexico border states between 2016 and 2019, all rail incidents increased 278 percent from 125 to 473 rail incidents. Among border states, Nuevo León has experienced the most rail incidents, followed by Tamaulipas.

In the U.S., railroads are required to report rail incidents to the U.S. Federal Railroad Administration including highway-rail at-grade crossing incidents, rail equipment incidents, and death, injury, and occupational illnesses. **Figure 3.10-51** details rail incidents resulting in casualty (injury or fatality) in the Texas border region. Rail incidents in Mexico are reported from insurance claims and may result in underreporting of minor incidents. **Figure 3.10-52** displays rail incidents in Mexico border states.
3.10.3 Asset Preservation

The BTMP Asset Preservation goal is to maintain and preserve cross-border region infrastructure that supports the Texas-Mexico multimodal movement of people and goods. The objective is to ensure infrastructure related to the cross-border movement of goods and people is maintained in a state of good repair. Asset preservation is measured by pavement conditions, bridge conditions, and border crossing conditions.

**Pavement Conditions**

- **Between 2010 and 2019, pavement conditions on the Texas side of the border region stayed relatively consistent, with the most improvement in the Laredo region between 2015 and 2016.**

TxDOT tracks pavement conditions on its on-system network with pavement conditions assigned a value between 0 and 100. Scores greater than or equal to 70 indicate the pavement is in good or better condition.

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Bridge Conditions

- **Bridge conditions** in the Texas border counties improved between 2012 and 2014, but have been declining since 2014.

- As of 2019, Texas bridge conditions in the El Paso/Santa Teresa/Chihuahua and Rio Grande Valley/Tamaulipas Regions are higher than the average score in the Texas border region, while bridge conditions scores in the Laredo/Coahuila/Nuevo León/Tamaulipas Region are lower.

- In 2019, Texas bridges in the El Paso/Santa Teresa/Chihuahua Region on average rated 89.91, while Texas bridges in the Laredo/Coahuila/Nuevo León/Tamaulipas Region rated 89.04, and Texas bridges in the Rio Grande Valley/Tamaulipas Region rated 89.46. The Texas borderwide score is 89.29.

TxDOT tracks domestic bridge conditions on roadways within the Texas border region. The bridge condition score is based on the most severe primary component condition rating. The primary bridge components are deck, superstructure, and substructure. Culverts that are 20 feet long or longer are considered bridges. Data is unavailable on the Mexico side of the border.
Border Crossing Conditions

- All Texas-Mexico border crossing structures are currently in good or fair condition—with the exception of Fort Hancock–El Porvenir.
- From an asset preservation view, most border crossing structures do not require major repairs.
- Due to increased trade volumes and border delays, some structures may require investments to ensure infrastructure is able to meet transportation demands.

The U.S. Federal Highway Administration developed Texas-Mexico border crossing conditions based on the National Bridge Inventory rating system based on the condition of the bridge deck, superstructure, and substructure. These ratings include only public bridges. TxDOT rated privately owned Texas-Mexico border crossing bridges in the Rio Grande Valley/Tamaulipas Region, which are tentatively shown as fair.

Figure 3.10-55. Texas-Mexico Border Crossing Structure Ratings

153 Good condition means there are no problems or minor problems. Fair condition means the primary structure is sound with minor issues in cracking, spalling, or scour. Poor condition means there is advanced section loss, deterioration, spalling, or scour.

154 National Bridge Inventory, FHWA, TxDOT.
3.11 Summary of Findings

The Texas-Mexico border is dynamic and ever-evolving, supporting the majority of U.S.-Mexico trade and facilitating the movement of people and goods through 28 Texas-Mexico and Santa Teresa vehicle crossings, along with multimodal corridors and supporting POE facilities. Increases in border region population, employment, income, and education, along with overall U.S. and Mexico consumption patterns, impact travel demand on the border crossings, multimodal corridors, and supporting facilitates. However, border infrastructure has not kept pace with the growth in transportation demand at the border. With continued population growth, the ratification of the USMCA, and the increasing trend of nearshoring businesses in Mexico placing additional pressure on the border, further investment in border infrastructure is important to maintaining and enhancing the efficient movement of people and goods across the Texas-Mexico border.

Chapter 4 outlines the Texas-Mexico multimodal corridor designation process, which will be used in future chapters to analyze border infrastructure assets, identify network and system needs, and develop strategies to address current and future demands.
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Chapter 4 Texas-Mexico Multimodal Transportation Network Designation

International trade depends on a binational multimodal transportation network that allows the efficient movement of both people and goods.

The Texas-Mexico border region exemplifies this dependency, since it is the main gateway for trade between the United States and Mexico, and it is expected to maintain that position in the future. Improvement to the binational multimodal transportation network associated with the Texas-Mexico border is needed to keep pace with the growth in transportation demand at the border crossings.

The purpose of this chapter is to present the designation of the Texas-Mexico multimodal transportation network serving the Texas-Mexico border. This designation is created as a foundation to identify the multimodal transportation network needs (Chapter 5), develop the process to identify and evaluate strategies to address the current and future needs (Chapter 8), and identify the potential recommended solutions to address those needs (Chapters 10 and 11).

The Texas-Mexico multimodal transportation network designation presented in this chapter identify the key routes and corridors used for the binational movement of people and goods through the Texas-Mexico border. In addition, the designation serves as a starting point to identify strategies to improve the efficiency of the movement of people and goods, not only for the Texas-Mexico border region but also for geographies that are farther afield but still part of the designated multimodal corridors, geographies such as Texas, Mexico, and the U.S.

The designation of the Texas-Mexico multimodal transportation network begins at the border crossing. The border crossing is the place where multimodal networks of each country come together and identifying first- and last-mile connections to them is important. The designation expands from the border crossings into larger geographical areas, including planning analysis spheres encompassing the border region, border states, and beyond into the entire U.S., Mexico, and Canada. The Texas-Mexico multimodal transportation network designation includes:

- Twenty-eight Texas-Mexico and the Santa Teresa vehicle border crossings, and 6 freight rail border crossings along the Texas-Mexico border
- The transportation network in each of the three Texas-Mexico border regions\(^1\) — El Paso/Santa Teresa/Chihuahua, Laredo/Coahuila/Nuevo León/Tamaulipas, and Rio Grande Valley/Tamaulipas
- The transportation network in the entire Texas-Mexico border region\(^2\)
- The transportation network in the state of Texas and Mexico’s four border states—Chihuahua, Coahuila, Nuevo León, and Tamaulipas
- The transportation network supporting the U.S.-Mexico-Canada Agreement (USMCA)

\(^1\) The three regions align with the TxDOT districts that oversee border-related issues—El Paso, Laredo, and Pharr—and are consistent with previous TxDOT border master plans.
\(^2\) Comprising 60 miles (100 kilometers) north and south of the Texas-Mexico border.
The identified and designated network supports the Texas-Mexico Border Transportation Master Plan (BTMP) by:

- Integrating with the identified vision, goals, and objectives presented in Chapter 2
- Creating the linkages with the recent past and the current conditions—Texas-Mexico Border: Past and Present—across all border crossings, modes, and systems, as presented in Chapter 3
- Providing an organization of the overall Texas-Mexico multimodal transportation network for the assessment of transportation system issues and needs presented in Chapter 5
- Providing a framework for the development and evaluation of potential recommendations and solutions to address needs in Chapters 10 and 11

This chapter presents the criteria and process used to designate the Texas-Mexico multimodal transportation network for the BTMP.

### 4.1 Criteria and Process for Designation

#### 4.1.1 Three Previous Border Master Plans

The three previous border master plans were developed independently of one another and for each of the three border regions. They served as the starting point for the designation process. The three border master plans are:

- El Paso/Santa Teresa - Chihuahua Border Master Plan
- Laredo-Coahuila/Nuevo León/Tamaulipas Border Master Plan
- Lower Rio Grande Valley—Tamaulipas Border Master Plan

#### 4.1.2 Spheres

Building on the three border regions, planning analysis areas—referred to as spheres—were identified to assess different levels of geographic detail and characteristics of the Texas-Mexico multimodal transportation network for the BTMP. Spheres were designed to connect binational multimodal transportation corridors that start at the individual border crossings, expand into the entire border region, and farther afield across the Texas, the U.S., and Mexico transportation networks.

Five spheres were used to assess transportation system needs and evaluate future BTMP strategy improvements.

The spheres were based on two primary sources: (1) the data inventory of multimodal transportation, geographic information, socioeconomic data, and supply chain characteristics and (2) transportation system input gathered in BTMP stakeholder and public outreach events held in each border region. Figure 4.1-1 and Figure 4.1-2 show the spheres used to develop the BTMP.

---

3 The three previous border master plans, developed between 2012 and 2013, are El Paso/Santa Teresa/Chihuahua, Laredo/Coahuila/Nuevo León/Tamaulipas, and Rio Grande Valley/Tamaulipas.
Sphere 1: 60 miles (100 kilometers [km]) north and south of the border
- Primary multimodal transportation planning analysis
- Includes 28 Texas-Mexico vehicle border crossing and Santa Teresa border crossing
- Includes 6 freight rail border crossings

Sphere 2: Approximately 100 miles (160 km) north and south of the border representing key population and production centers
- Includes key population and goods production centers

Sphere 3: Five border states (Texas, Chihuahua, Coahuila, Nuevo León, and Tamaulipas)
- Includes the states adjacent to the Texas-Mexico border

Sphere 4: U.S. and Mexico

Sphere 5: U.S., Mexico, and Canada (NAFTA/USMCA)

Figure 4.1-1. Planning Spheres 1, 2 and 3
4.1.3 Designate Border Crossings by Movement of People and Goods

The process of designating the Texas-Mexico multimodal transportation network started by identifying each of the vehicular border crossings by size—very large, large, medium, or small—across the 28 Texas-Mexico vehicle border crossings as well as the Santa Teresa vehicle crossing. The process also differentiates the type of movement—people or goods.

People movements represented passenger vehicles (POVs), pedestrians and bicyclists, and bus riders, and goods movement represented commercial vehicles (CMVs). Stakeholder inputs were used to categorize, refine, and finalize the border crossing designations.
Existing northbound border crossing volumes were used to define border crossing size thresholds. Table 4.1.1 through Table 4.1.4 show the movements of people and goods and volume thresholds at the border crossings and the border crossing designations.4

### Thresholds Used in Designation of Border Crossings for People Movements

#### Table 4.1.1. Northbound Annual POV Volumes at Border Crossings

<table>
<thead>
<tr>
<th>Border Crossing Designation</th>
<th>Annual Volume Threshold</th>
<th># of Border Crossings</th>
</tr>
</thead>
<tbody>
<tr>
<td>LARGE</td>
<td>2,000,000 +</td>
<td>5</td>
</tr>
<tr>
<td>MEDIUM</td>
<td>500,000 – 1,999,999</td>
<td>16</td>
</tr>
<tr>
<td>SMALL</td>
<td>1 – 499,999</td>
<td>7</td>
</tr>
</tbody>
</table>

#### Table 4.1.2. Northbound Annual Pedestrian Volumes at Border Crossings5

<table>
<thead>
<tr>
<th>Border Crossing Designation</th>
<th>Annual Volume Threshold</th>
<th># of Border Crossings</th>
</tr>
</thead>
<tbody>
<tr>
<td>LARGE</td>
<td>1,000,000 +</td>
<td>7</td>
</tr>
<tr>
<td>MEDIUM</td>
<td>100,000 – 999,999</td>
<td>9</td>
</tr>
<tr>
<td>SMALL</td>
<td>1 – 99,999</td>
<td>7</td>
</tr>
</tbody>
</table>

---

4 The border crossing designations were created using data on movements for the year 2017 and were presented to binational stakeholders for validation. A similar designation of border crossings results when crossing volumes for the year 2019 are used.

5 Even though the Pharr-Reynosa International border crossing allows pedestrian movements, it did not report any such crossings in 2017.
Table 4.1.3. Northbound Annual Bus Rider Volumes at Border Crossings

<table>
<thead>
<tr>
<th>Border Crossing Designation</th>
<th>Annual Volume Threshold</th>
<th># of Border Crossings</th>
</tr>
</thead>
<tbody>
<tr>
<td>LARGE</td>
<td>10,000 +</td>
<td>2</td>
</tr>
<tr>
<td>MEDIUM</td>
<td>1,000 – 9,999</td>
<td>5</td>
</tr>
<tr>
<td>SMALL</td>
<td>1 – 999</td>
<td>4</td>
</tr>
</tbody>
</table>

Thresholds Used in Designation of Border Crossings for Goods Movement

Table 4.1.4. Northbound Annual CMV Movements at Border Crossings

<table>
<thead>
<tr>
<th>Border Crossing Designation</th>
<th>Annual Volume Threshold</th>
<th># of Border Crossings</th>
</tr>
</thead>
<tbody>
<tr>
<td>VERY LARGE</td>
<td>1,500,000 +</td>
<td>1</td>
</tr>
<tr>
<td>LARGE</td>
<td>500,000 – 1,499,999</td>
<td>2</td>
</tr>
<tr>
<td>MEDIUM</td>
<td>75,000 – 499,999</td>
<td>6</td>
</tr>
<tr>
<td>SMALL</td>
<td>1 – 74,999</td>
<td>5</td>
</tr>
</tbody>
</table>

Table 4.1-5 shows the people and goods movement border crossing designations by border region. The small (S), medium (M), large (L), and very large (VL) designations by border region, border crossing, type of movement (people movement and goods movement), and mode and systems (CMV, POV, pedestrian, and bus rider movements) were presented to stakeholders for refinement and finalization. Based on stakeholder input, very large designations were identified for CMV movements only to account for significantly higher CMV activity at the World Trade Bridge in the Laredo/Coahuila/Nuevo León/Tamaulipas Region.
Designation of Border Crossings for People Movements

Table 4.1-5 presents the modes of people movement for each border crossing by region and their location. The border crossing designations for POV movements are shown in Figure 4.1-3 along with the designation of small, medium or large border crossings. The size designation is based on thresholds noted in Table 4.1.1 through Table 4.1.3.

<table>
<thead>
<tr>
<th>Region</th>
<th>Border Crossing</th>
<th>Location (City)</th>
<th>People Movement</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>POV</td>
</tr>
<tr>
<td>El Paso/Santa Teresa/Chihuahua Region</td>
<td>Santa Teresa</td>
<td>Santa Teresa, NM San Jerónimo, Chih.</td>
<td>M</td>
</tr>
<tr>
<td></td>
<td>Paso del Norte</td>
<td>El Paso, TX Ciudad Juárez, Chih.</td>
<td>L</td>
</tr>
<tr>
<td></td>
<td>Good Neighbor</td>
<td>El Paso, TX Ciudad Juárez, Chih.</td>
<td>M</td>
</tr>
<tr>
<td></td>
<td>Bridge of the Americas</td>
<td>El Paso, TX Ciudad Juárez, Chih.</td>
<td>L</td>
</tr>
<tr>
<td></td>
<td>Ysleta-Zaragoza</td>
<td>El Paso, TX Ciudad Juárez, Chih.</td>
<td>L</td>
</tr>
<tr>
<td></td>
<td>Tornillo-Guadalupe International Bridge</td>
<td>Fabens, TX Caseta, Chih.</td>
<td>S</td>
</tr>
<tr>
<td></td>
<td>Fort Hancock-El Porvenir</td>
<td>Fabens, TX El Porvenir, Chih.</td>
<td>S</td>
</tr>
<tr>
<td></td>
<td>Presidio Bridge</td>
<td>Presidio, TX Ojinaga, Chih.</td>
<td>M</td>
</tr>
<tr>
<td></td>
<td>Lake Amistad Dam Crossing</td>
<td>Del Rio, TX Ciudad Acuña, Coah.</td>
<td>S</td>
</tr>
<tr>
<td></td>
<td>Del Rio-Ciudad Acuña International Bridge</td>
<td>Del Rio, TX Ciudad Acuña, Coah.</td>
<td>M</td>
</tr>
<tr>
<td></td>
<td>Eagle Pass I</td>
<td>Eagle Pass, TX Piedras Negras, Coah.</td>
<td>M</td>
</tr>
<tr>
<td></td>
<td>Camino Real International Bridge</td>
<td>Eagle Pass, TX Piedras Negras, Coah.</td>
<td>M</td>
</tr>
<tr>
<td></td>
<td>Laredo-Colombia Solidarity Bridge</td>
<td>Laredo, TX Colombia, NL</td>
<td>S</td>
</tr>
<tr>
<td></td>
<td>World Trade Bridge</td>
<td>Laredo, TX Nuevo Laredo, Tamps.</td>
<td>n/a</td>
</tr>
<tr>
<td></td>
<td>Gateway to the Americas</td>
<td>Laredo, TX Nuevo Laredo, Tamps.</td>
<td>M</td>
</tr>
<tr>
<td></td>
<td>Juárez-Lincoln</td>
<td>Laredo, TX Nuevo Laredo, Tamps.</td>
<td>L</td>
</tr>
<tr>
<td>Region</td>
<td>Border Crossing</td>
<td>Location (City)</td>
<td>People Movement</td>
</tr>
<tr>
<td>------------------------------------</td>
<td>----------------------------------</td>
<td>---------------------------------------------------------------------</td>
<td>----------------</td>
</tr>
<tr>
<td><strong>Rio Grande Valley/ Tamaulipas Region</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lake Falcon Dam Crossing</td>
<td>Falcon Heights, TX Ciudad Guerrero, Tamps.</td>
<td>S n/a M</td>
<td></td>
</tr>
<tr>
<td>Roma-Ciudad Miguel Alemán</td>
<td>Roma, TX Ciudad Miguel Alemán, Tamps.</td>
<td>M M S</td>
<td></td>
</tr>
<tr>
<td>Rio Grande City–Camargo</td>
<td>Rio Grande, TX Camargo, Tamps.</td>
<td>S S n/a M</td>
<td></td>
</tr>
<tr>
<td>Los Ebanos Ferry</td>
<td>Los Ebanos, TX Gustavo Díaz Ordaz, Tamps.</td>
<td>S S n/a M</td>
<td></td>
</tr>
<tr>
<td>Anzalduas International</td>
<td>Mission, TX Reynosa, Tamps.</td>
<td>M n/a n/a</td>
<td></td>
</tr>
<tr>
<td>McAllen-Hidalgo</td>
<td>Hidalgo, TX Reynosa, Tamps.</td>
<td>L L L</td>
<td></td>
</tr>
<tr>
<td>Pharr-Reynosa International Bridge on the Rise</td>
<td>Pharr, TX Reynosa, Tamps.</td>
<td>M n/a n/a</td>
<td></td>
</tr>
<tr>
<td>Donna International</td>
<td>Donna, TX Río Bravo, Tamps.</td>
<td>M n/a n/a</td>
<td></td>
</tr>
<tr>
<td>Progreso International</td>
<td>Progreso, TX Nuevo Progreso, Tamps.</td>
<td>M L n/a</td>
<td></td>
</tr>
<tr>
<td>Free Trade Bridge</td>
<td>Los Indios, TX Lucio Blanco, Tamps.</td>
<td>M S n/a</td>
<td></td>
</tr>
<tr>
<td>B &amp; M</td>
<td>Brownsville, TX Matamoros, Tamps.</td>
<td>M M n/a</td>
<td></td>
</tr>
<tr>
<td>Gateway International</td>
<td>Brownsville, TX Matamoros, Tamps.</td>
<td>M L n/a</td>
<td></td>
</tr>
<tr>
<td>Veterans International at Los Tomates</td>
<td>Brownsville, TX Matamoros, Tamps.</td>
<td>M S M</td>
<td></td>
</tr>
</tbody>
</table>
Figure 4.1-3. Designation of Border Crossings for POV

Designation of Border Crossings for Passenger Vehicles
- Small (7)
- Medium (16)
- Large (5)
### Designation of Border Crossings for Goods Movement

Table 4.1-6 presents the modes of people movement for each border crossing by region and their location. The border crossing designations for CMV movements are shown in Figure 4.1-4 along with the designation of small, medium or large border crossings. The size designation is based on thresholds noted in Table 4.1.4.

#### Table 4.1-6. Goods Movement Border Crossing Designations

<table>
<thead>
<tr>
<th>Region</th>
<th>Border Crossing</th>
<th>Location (City)</th>
<th>Goods Movement: CMV</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>El Paso/Santa Teresa/Chihuahua Region</strong></td>
<td>Santa Teresa</td>
<td>Santa Teresa, NM San Jerónimo, Chih.</td>
<td>M</td>
</tr>
<tr>
<td></td>
<td>Paso del Norte</td>
<td>El Paso, TX Ciudad Juárez, Chih.</td>
<td>n/a</td>
</tr>
<tr>
<td></td>
<td>Good Neighbor</td>
<td>El Paso, TX Ciudad Juárez, Chih.</td>
<td>n/a</td>
</tr>
<tr>
<td></td>
<td>Bridge of the Americas</td>
<td>El Paso, TX Ciudad Juárez, Chih.</td>
<td>M</td>
</tr>
<tr>
<td></td>
<td>Ysleta-Zaragoza</td>
<td>El Paso, TX Ciudad Juárez, Chih.</td>
<td>L</td>
</tr>
<tr>
<td></td>
<td>Tornillo-Guadalupe International Bridge</td>
<td>Fabens, TX Caseta, Chih.</td>
<td>n/a</td>
</tr>
<tr>
<td></td>
<td>Fort Hancock-El Porvenir</td>
<td>Fabens, TX El Porvenir, Chih.</td>
<td>n/a</td>
</tr>
<tr>
<td></td>
<td>Presidio Bridge</td>
<td>Presidio, TX Ojinaga, Chih.</td>
<td>S</td>
</tr>
<tr>
<td><strong>Laredo/Coahuila/Nuevo León/Tamaulipas Region</strong></td>
<td>Lake Amistad Dam Crossing</td>
<td>Del Rio, TX Ciudad Acuña, Coah.</td>
<td>n/a</td>
</tr>
<tr>
<td></td>
<td>Del Rio-Ciudad Acuña International</td>
<td>Del Rio, TX Ciudad Acuña, Coah.</td>
<td>M</td>
</tr>
<tr>
<td></td>
<td>Eagle Pass I</td>
<td>Eagle Pass, TX Piedras Negras, Coah.</td>
<td>n/a</td>
</tr>
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<td></td>
<td>Camino Real International</td>
<td>Eagle Pass, TX Piedras Negras, Coah.</td>
<td>M</td>
</tr>
<tr>
<td></td>
<td>Laredo-Colombia Solidarity</td>
<td>Laredo, TX Colombia, NL</td>
<td>M</td>
</tr>
<tr>
<td></td>
<td>World Trade Bridge</td>
<td>Laredo, TX Nuevo Laredo, Tamps.</td>
<td>VL</td>
</tr>
<tr>
<td></td>
<td>Gateway to the Americas</td>
<td>Laredo, TX Nuevo Laredo, Tamps.</td>
<td>n/a</td>
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<td>Juárez-Lincoln</td>
<td>Laredo, TX Nuevo Laredo, Tamps.</td>
<td>n/a</td>
</tr>
<tr>
<td><strong>Rio Grande Valley/Tamaulipas Region</strong></td>
<td>Lake Falcon Dam Crossing</td>
<td>Falcon Heights, TX Ciudad Guerrero, Tamps.</td>
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<td></td>
<td>Roma-Ciudad Miguel Alemán</td>
<td>Roma, TX Ciudad Miguel Alemán, Tamps.</td>
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<td></td>
<td>Rio Grande City-Camargo</td>
<td>Rio Grande, TX Camargo, Tamps.</td>
<td>S</td>
</tr>
<tr>
<td></td>
<td>Los Ebanos Ferry</td>
<td>Los Ebanos, TX Gustavo Díaz Ordaz, Tamps.</td>
<td>n/a</td>
</tr>
<tr>
<td>Region</td>
<td>Border Crossing</td>
<td>Location (City)</td>
<td>Goods Movement: CMV</td>
</tr>
<tr>
<td>--------------------------------------</td>
<td>------------------------------------------------------</td>
<td>-----------------------------</td>
<td>---------------------</td>
</tr>
<tr>
<td><strong>Rio Grande Valley/Tamaulipas Region</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anzalduas International</td>
<td>Mission, TX Reynosa, Tamps.</td>
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</tr>
<tr>
<td>McAllen-Hidalgo</td>
<td>Hidalgo, TX Reynosa, Tamps.</td>
<td>n/a</td>
<td></td>
</tr>
<tr>
<td>Pharr-Reynosa International Bridge on the Rise</td>
<td>Pharr, TX Reynosa, Tamps.</td>
<td>L</td>
<td></td>
</tr>
<tr>
<td>Donna International</td>
<td>Donna, TX Río Bravo, Tamps.</td>
<td>n/a</td>
<td></td>
</tr>
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<td>Progreso International</td>
<td>Progreso, TX Nuevo Progreso, Tamps.</td>
<td>S</td>
<td></td>
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<tr>
<td>Free Trade Bridge</td>
<td>Los Indios, TX Lucio Blanco, Tamps.</td>
<td>S</td>
<td></td>
</tr>
<tr>
<td>B &amp; M</td>
<td>Brownsville, TX Matamoros, Tamps.</td>
<td>n/a</td>
<td></td>
</tr>
<tr>
<td>Gateway International</td>
<td>Brownsville, TX Matamoros, Tamps.</td>
<td>n/a</td>
<td></td>
</tr>
<tr>
<td>Veterans International at Los Tomates</td>
<td>Brownsville, TX Matamoros, Tamps.</td>
<td>M</td>
<td></td>
</tr>
</tbody>
</table>
4.1.4 Designate Multimodal Corridors

U.S. and Mexican national and state sources were used to designate multimodal corridors in Texas and Mexico for Spheres 1, 2, and 3, and national roadways in Spheres 4 and 5. Stakeholder inputs were used to identify, refine, and finalize this roadway corridor designation process.
Roadway Corridors

The U.S. and Mexican national and state roadway networks evaluated in this process included:

- U.S. National Highway System
- U.S. National Highway Freight Network (NHFN)
- Texas Highway Freight Network (THFN), including intermodal connectors and CMV routes
- Texas Trunk System
- Mexico World Street View
- INEGI Red Nacional de Caminos Roadway Network

Roads were evaluated using several criteria, including connectivity to the border crossings and border regions, and facilitation of the movement of both POV and CMV travel demand to and from the border region (Sphere 1) and to population and employment centers (warehousing, industry clusters, intermodal facilities) in Sphere 2. Also included was the facilitation of critical major east-west and north-south roads providing travel demand connectivity to and from the border region to Spheres 3, 4, and 5.

The roadway identification and designation process was prepared, presented, and refined through input received from the Border Trade Advisory Committee and the Binational Regional Steering Committees, as well as from public and private stakeholders. Stakeholder and public outreach provided input to classify key roadway corridors for the BTMP by the following designations:

- International corridors
- Emerging international corridors
- Regional corridors
- Local corridors

- **International corridors** are the key roads that connect through the Texas-Mexico border to directly support binational movement of people and goods.

- An **emerging international corridor** is defined as a future binational corridor that is currently a local or regional corridor and requires additional investment solutions (policies, programs, and infrastructure projects) due to its future potential.

- **Regional corridors** are key roads that connect regionally and provide vital nationwide connectivity to and from the international corridors.

- **Local corridors** primarily provide connections to and from international and regional corridors, and also often provide first- and last-mile multimodal network connectivity to and from the border crossings and to and from warehouses and distribution centers.

The international corridors include interstates such as I-10, I-27, I-35, I-37, I-45, and I-69 in the U.S. and federal highways FH 40, FH 45, FH 57, and FH 85 in Mexico. The regional corridors identified include key regional interstates and highways such as I-20, I-30, and I-40 in the U.S. and other key regional federal highways such as FH 2 in Mexico (Figure 4.1-5).
The border crossing designations and international, emerging international, regional, and local roadway corridors for the BTMP as shown above represent the foundation for designating multimodal corridors. The focus of the roadway corridor designation is on Texas and the four border states in Mexico (corresponding to Sphere 3) since these states are heavily involved in planning for critical major east-west and north-south roads that provide long-haul connectivity between the border region and the rest of the countries.
Multimodal Systems

Other modes are vital to the movement of people and goods to and from the border. The following multimodal systems were identified across each sphere and were integrated with the identified roadway corridors:

- Pedestrian and bicycle facilities
- Intercity bus routes and terminals
- Freight rail
- Airports
- Pipelines
- Seaports

For each of the 11 identified international or emerging international roadway corridors, 10-mile (16-km) buffers were prepared to designate the BTMP multimodal cross-border corridors. The buffer radius of 10 miles was developed for all designated international corridors to capture network proximity and connectivity with other transportation modes and to identify currently and future expected intermodal interactions with the roadway corridors.

The integration, accessibility, and connectivity characteristics of each transportation mode were highlighted in this step. Of the 11 designated multimodal corridors, six corridors serve primarily north-south movement and run across the Texas-Mexico border to connect the wider U.S. and Texas to Mexico. These corridors are:

1. I-10/FH 45 El Paso (connecting to I-25 in Las Cruces)
2. I-27/FH 57
3. I-35/FH 85
4. Brownsville I-69
5. Laredo I-69
6. Presidio-Ojinaga (US 67/FH 67) emerging international multimodal corridor

The other five designated corridors serve primarily east-west movement across Texas and/or through the rest of the U.S. These corridors do not physically cross the Texas-Mexico border, but they provide vital connections to and from other binational corridors that primarily run north and south across the Texas-Mexico border. These multimodal corridors are:

1. I-10 (New Mexico–Texas state line to Texas-Louisiana state line)
2. I-20
3. I-30
4. I-37 Port of Corpus Christi
5. I-45 Port of Houston

The integration of the different transportation modes into the BTMP analysis highlights the importance of connectivity between the border, production, and consumption centers, and multimodal transportation infrastructure to facilitate international trade. For example, seaports are

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6 This includes Foreign Trade Zones, which facilitate trade across the U.S. and Mexico.
enablers of the movement of goods between the U.S. and Mexico through other modes. They allow raw materials and semiprocessed goods to arrive from outside of North America and into their last manufacturing destination before crossing the border for their consumption. For Mexico, the connectivity between seaports such as Mazatlán, Manzanillo, Veracruz, and Lázaro Cárdenas and the Texas-Mexico border through the roadway and freight rail networks is key to maintaining efficient manufacturing and value-added operations at the border. For the U.S., a key market for the Port of Brownsville is Monterrey. Therefore, multimodal connectivity between this port and the border is highly important to maintaining the seamless movement of goods. The integration and connectivity between the Texas-Mexico border and seaports, roads, and freight rail is shown in Figure 4.1-6.
The Texas-Mexico multimodal transportation network designation includes the integration of the vehicle border crossings with the corridor designations and the multimodal transportation networks. Figure 4.1-7 through Figure 4.1-10 show the designated Texas-Mexico multimodal transportation network for Sphere 1 by each of the three border regions.

Figure 4.1-7. Sphere 1 Texas-Mexico Multimodal Transportation Network Linked with Corridor Designations: El Paso/Santa Teresa/Chihuahua Region (Near El Paso)
Figure 4.1-8. Sphere 1 Texas-Mexico Multimodal Transportation Network Linked with Corridor Designations: El Paso/Santa Teresa/Chihuahua Region (near Presidio)
Figure 4.1-9. Sphere 1 Texas-Mexico Multimodal Transportation Network Linked with Corridor Designations: Laredo/Cohuila/Nuevo León/Tamaulipas Region
Figure 4.1-10. Sphere 1 Texas-Mexico Multimodal Transportation Network Linked with Corridor Designations: Rio Grande Valley/Tamaulipas Region
4.2 Final Designated Multimodal Network

The final designated multimodal transportation network is shown in Figure 4.3-1. The multimodal transportation network evaluated in Sphere 1 considers each of the 28 Texas-Mexico vehicle crossings, the Santa Teresa vehicle crossing, and 6 rail border crossings operations and first- and last-mile people and goods movement connections. The designated multimodal corridors in Spheres 1 and 2 are also used to analyze the transportation system impacts in Texas, the Mexican border states, Mexico, the U.S., and Canada (in Spheres 3–5).

This final network is used to guide detailed analyses of BTMP multimodal transportation needs presented in Chapter 5 and to inform the process to identify and evaluate potential strategies presented in Chapter 8. These analyses and process are then combined in Chapters 10 and 11 to identify potential solutions to address needs identified by the BTMP. The designations, starting with the border crossings, including first- and last-mile connections, and culminating with multimodal corridors, provide an interconnected transportation network encompassing all transportation modes representative of each of the three border regions.

4.3 Summary of Findings

The final designated Texas-Mexico multimodal transportation network for the BTMP was determined through a process involving review of border movements, roadway networks, and multimodal systems as well as stakeholder input. The final designated Texas-Mexico multimodal transportation network guided the needs analysis presented in Chapter 5 and the development of the process to identify and evaluate future strategies to address those needs presented in Chapter 8. The future forecasts and economic analysis presented in Chapters 6 and 7 were used to identify the expected state of the Texas-Mexico multimodal transportation network in the future. The outcomes of this chapter—the final designated multimodal transportation network—in combination with the future forecasts and economic analysis—supported the development of the recommendations for policies, programs, and projects, and their implementation plans presented in Chapters 10 and 11.

The next chapter, Chapter 5, addresses current and future issues and needs on the Texas-Mexico border transportation system.
Figure 4.3-1. Designated Final Texas-Mexico Multimodal Transportation Network
Chapter 5

Current and Future Needs Assessment
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Appendices

Appendix 5A. Operational and Capacity Needs by Border Crossing
Chapter 5  Current and Future Needs Assessment

This chapter summarizes current and future issues and needs of the Texas-Mexico multimodal transportation network designated in Chapter 4 and sets the stage for identifying the strategies and recommendations of the Texas-Mexico Border Transportation Master Plan (BTMP).

Continued growth of population, trade, and personal travel demand has outpaced investments in borderwide multimodal transportation infrastructure. This has resulted in increasing border crossing times, corridor and local congestion, safety hot spots, deferred maintenance, and connectivity gaps – especially within the last mile of the border. If not addressed, these issues could undermine future economic prosperity and impact quality of life in the Texas-Mexico border regions and beyond.

To address these gaps, the identification of issues and assessment of needs are grounded in a data-driven approach, drawing on the input of stakeholders in the United States and Mexico, existing plans and studies, and additional data analysis. The needs form the basis for the strategies and recommendations of the BTMP. This chapter organizes the issues and needs according to cross-cutting themes cited by stakeholders and the goals of the BTMP. Cross-cutting themes characterize the areas of stakeholder interest that transcend BTMP goals.

Table 5.1-1 describes the issues and needs of Texas-Mexico multimodal transportation network as they related to the cross-cutting themes cited by stakeholders.

Border crossings and multimodal transportation system issues and needs and their relationship to the BTMP goals fall into two broad categories: those that require changes to processes and those that require performance improvement. The following figures summarize the issues and needs for all BTMP goals. Table 5.1-2 features issues and needs that can be addressed through improved processes such as funding, resiliency, stewardship, etc. Table 5.1-3 summarizes issues, border crossing needs, and corridor-specific needs—organized by BTMP goal area—that are related to performance. The needs assessment, combined with the 2050 forecast and economic analysis, forms the foundation for BTMP strategies identification and recommendations.
### Table 5.1-1. Issues and Needs by Cross-cutting Themes

<table>
<thead>
<tr>
<th>Cross-cutting Theme</th>
<th>Issue</th>
<th>Need</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Texas-Mexico Multimodal Coordination, Collaboration, and Cooperation</strong></td>
<td>Border planning, management, and operations are complex and require the participation of and coordination among Texas-Mexico federal, state, local, and private partners.</td>
<td>Comprehensive Texas-Mexico coordination to better plan, invest, manage, and operate border crossings and the multimodal transportation network.</td>
</tr>
<tr>
<td><strong>Integration of New Technologies</strong></td>
<td>The integration and deployment of new technologies at the border crossings and along connecting corridors require consistent borderwide planning.</td>
<td>Consistent planning to integrate and deploy future technological advances across the border transportation system.</td>
</tr>
<tr>
<td><strong>Data Collection, Harmonization, Sharing, and Analysis</strong></td>
<td>U.S. and Mexico data gaps make it difficult to adequately understand border conditions and needs.</td>
<td>Consistent data collection, harmonization, sharing, and analysis of trade and transportation data among Texas-Mexico federal, state, local, and private partners.</td>
</tr>
<tr>
<td><strong>System Monitoring</strong></td>
<td>Lack of comprehensive monitoring of border transportation system.</td>
<td>Institutional framework for system monitoring of the border transportation system.</td>
</tr>
</tbody>
</table>

### Table 5.1-2. Issues and Needs by Goal – Processes

<table>
<thead>
<tr>
<th>Goal</th>
<th>Issue</th>
<th>Need</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Economic Competitiveness</strong></td>
<td>The economic potential of the border is not fully realized due to inefficiencies.</td>
<td>Improvements to U.S. and Mexico policy coordination, connecting transportation infrastructure, and response to potential disruptions.</td>
</tr>
<tr>
<td><strong>Cross-border Resiliency</strong></td>
<td>Susceptibility of border crossings and multimodal transportation infrastructure to unforeseen and disruptive events.</td>
<td>Enhanced network redundancy and border resiliency policies with programmatic planning for systemic processes, procedures, and investments in the case of unforeseen and disruptive events.</td>
</tr>
<tr>
<td><strong>Sustainable Funding</strong></td>
<td>Transportation demand on the border transportation system outpaces funding availability for improvements.</td>
<td>Expansions of existing funding sources and development of new dedicated funding for the border crossings and corridors.</td>
</tr>
<tr>
<td><strong>Customer Service</strong></td>
<td>Raising awareness of the issues and needs of the border and multimodal transportation network.</td>
<td>Stakeholder participation in decision-making on border planning, investments, management, and operations.</td>
</tr>
<tr>
<td><strong>Stewardship and Sustainability</strong></td>
<td>Environmental and community impacts of the border transportation system, including congestion, air quality, and hazardous materials.</td>
<td>Harmonization of U.S. and Mexico standards and regulations, air quality strategies, improved routing and design, renewable energy, and hazardous material policies and disposal sites.</td>
</tr>
<tr>
<td>Goal</td>
<td>Issue</td>
<td>Border Crossing Needs</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>-----------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Mobility and Reliability:</td>
<td>Increasing border wait times and delays, roadway congestion, and</td>
<td>Coordinated border management, advanced technologies, increased border inspection staff and</td>
</tr>
<tr>
<td>Operational Efficiency</td>
<td>occupied at-grade rail crossings.</td>
<td>hours of operation, improved distribution of passenger vehicles (POV) and commercial</td>
</tr>
<tr>
<td></td>
<td></td>
<td>motor vehicles (CMV), and streamlined procedures.</td>
</tr>
<tr>
<td>Mobility and Reliability:</td>
<td>Insufficient physical capacity to accommodate growing traffic volumes.</td>
<td>Expanded and new border crossings and to address overutilization, and performance</td>
</tr>
<tr>
<td>System Capacity</td>
<td></td>
<td>monitoring system.</td>
</tr>
<tr>
<td>Safety and Security</td>
<td>Concentration of incidents and crashes in urban areas and near</td>
<td>Improved design and physical separation of lanes for CMVs at higher traffic crossings,</td>
</tr>
<tr>
<td></td>
<td>border crossings.</td>
<td>hazardous material safety practices, site-specific safety needs, and bike/pedestrian</td>
</tr>
<tr>
<td>Connectivity</td>
<td>Demand on the Texas-Mexico multimodal transportation network has</td>
<td>Greater connectivity to and between border crossings and enhanced pedestrian and transit</td>
</tr>
<tr>
<td></td>
<td>outpaced capacity.</td>
<td>connections between border crossings and urban centers.</td>
</tr>
<tr>
<td>Asset Preservation</td>
<td>Outdated infrastructure and poor condition of some pavements, bridges,</td>
<td>Development of an asset management program for border crossings and sustainable funding</td>
</tr>
<tr>
<td></td>
<td>and one border crossing bridge.</td>
<td>sources.</td>
</tr>
</tbody>
</table>

Table 5.1-3. Issues and Needs by Goal – Performance
5.1 Cross-cutting Issues and Needs

Stakeholders consistently cited four high-level issues that the BTMP should address: Texas-Mexico coordination, collaboration, and cooperation; integrating new technologies; data collection, harmonization, sharing, and analysis; and system monitoring. These cross-cutting themes transcend BTMP goals presented in Chapter 2.

5.1.1 Texas-Mexico and Multimodal Coordination, Collaboration, and Cooperation

Texas-Mexico border and multimodal transportation planning, investments, management, and operations require participation at the federal, state, regional, and local levels from public and private partners.

Texas and Mexico share a 1,254-mile international border, with border crossings that facilitate the movement of $385 billion in trade (CMV and rail) and over 86 million people annually. The international border makes it complex to plan and execute policies, programs, and projects in the border regions. Improving Texas-Mexico coordination and harmonization of policies, programs, and projects is essential to the safe and efficient cross-border movement of people and goods. Texas-Mexico coordination is needed not only at the border but also for the transportation systems on each side that connect to the border.

Border and multimodal planning, investments, management, and operations take careful planning and coordination with numerous partners.

Processes on each side of the border need improved coordination between U.S. and Mexico federal, state, regional, local, and private partners. Furthermore, there is opportunity to improve understanding of institutions and institutional frameworks on both the U.S. and Mexico sides related to the management of border crossings and of the transportation systems that facilitate the cross-border movement of people and goods. These gaps create a need for extensive Texas-Mexico, multilevel collaboration; information exchange; and a communication framework.

Enhanced collaboration and cooperation of all parties is needed to prepare the Texas-Mexico multimodal transportation network to meet future needs.
5.1.2 Integration of New Technologies

The Texas-Mexico border region needs more consistent planning to integrate and deploy new technologies at the border and along connecting multimodal transportation corridors.

The overarching borderwide need is consistent planning and preparation for the future of transportation innovations. The rapid expected adoption of new technologies and alternative fuel vehicles will require future upgrades in the transportation system and border crossing processes. Some examples of the future of cross-border transportation issues include the following:

- Need for standardized systems, processes, capabilities, and data collection across all border crossings.
- Opportunity to streamline permitting, inspection, and documentation procedures.
- Potential for broader use of innovative screening technologies at border crossings.
- Need for improvements in facilitating shared mobility modes.
- Need for improvements in facilitating vehicle-to-infrastructure communication, which requires supporting connected infrastructure.
- Strategies to decrease long waits at at-grade rail crossings.
- Need to facilitate alternative fuel vehicles, which requires supporting infrastructure.

The future success of cross-border transportation requires continued collaborative planning to ensure the system is adequately prepared to accommodate innovations and new technologies.

5.1.3 Data Collection, Harmonization, Sharing, and Analysis

There are gaps and inconsistencies in cross-border trade and personal transportation data collection among federal, state, regional, local, and private partners that hinder implementation of effective strategies.

Although agencies have invested in various data-collection processes, various borderwide data gaps remain. Sample data needs include but are not limited to, the following:

- Comprehensive borderwide total crossing time data
- Accessible southbound volumes data by mode
- Accessible Mexico volumes and congestion data at a segment level
- Accessible Mexico safety incident and crash data across all modes
- Accessible Mexico asset preservation data at a segment level
There are many gaps related to collecting data needed to better understand border transportation issues. Some of the impediments with data collection, sharing, harmonization, and analysis are as follows:

- **Limited federal policies in place to share border data between the U.S. and Mexico.** The U.S.-Mexico Entry/Exit Data Sharing Initiative allows U.S. Customs and Border Protection (CBP) and Mexico’s National Migration Institute to exchange border crossing information for entry/exit recordkeeping. However, there is a need for U.S.-Mexico federal transportation data collection, harmonization, sharing, and analysis policies.

- **Need for improvements in data harmonization between different partners.** Although volumes of data are collected binationally among federal, state, local, and private partners, data is not collected in the same way. Datasets can vary based on content, timeframe, geography, level of detail, methodologies, and assumptions.

- **Need for better applications of binational data analysis programs.** Although some datasets are available, for example, U.S.-Mexico commodity trade data, binational data analysis improvements are needed.

Continued and enhanced collaboration among all parties to harmonize data collection, sharing, and analysis will advance borderwide planning, investments, management, and operations.

### 5.1.4 System Monitoring

Because of inconsistent data collection, sharing, harmonization, and analysis, there are challenges with monitoring the performance of the border transportation system.

There is a need for agencies to comprehensively and systemically monitor the performance of the Texas-Mexico multimodal transportation network. This requires an institutional framework for system monitoring.

- **Difficulty of performance monitoring:** Establishing a consistent means of measuring performance is a complicated task—requiring Texas-Mexico political and technical cooperation to establish and maintain a data collection and monitoring system. However, such a system is needed to track the performance of the border transportation system over time and to identify needs to shape future policies, programs, and projects.

- **Importance of performance monitoring:** The border infrastructure operations and demand are influenced by a host of constantly changing factors—including the North American Free Trade Agreement (NAFTA), September 11, the Coronavirus Disease 2019 (COVID-19) pandemic, the U.S.-Mexico-Canada Agreement (USMCA), and other turning points that impact the performance of the border transportation system.
Performance monitoring tools: U.S. and Mexico have different performance monitoring tools and measures on the border transportation system. The use of a harmonized performance monitoring tool would facilitate binational planning.

Effective and collaborative performance monitoring in the future will enable border stakeholders to identify, articulate, and prioritize needs.

5.2 BTMP Process Goals Issues and Needs

This section summarizes issues and needs for each of the BTMP process-driven goals: sustainable funding, economic competitiveness, cross-border resiliency, stewardship and sustainability, and customer service. The following section presents issues and needs for each of the BTMP goals.

5.2.1 Sustainable Funding

Demand on Texas-Mexico border crossings and multimodal transportation network outpaces funding availability for infrastructure investments.

There is a need to expand existing funding sources and establish dedicated funding for the Texas-Mexico border crossings and the borderwide multimodal transportation network.

Funding for border crossings and transportation infrastructure has not kept pace with historical increases in people and goods movement across the Texas-Mexico border.

There are varied funding sources at the federal, state, regional, local levels, along with the private sector.

There is still a need for a uniform decision-making process on both sides of the border to allocate available funding based on set priorities, and border communities must leverage their limited funding and financing resources to invest in border crossings and the transportation network.

- **Federal Funding and Financing Sources:** There are few dedicated border crossing and transportation infrastructure funding programs, including North American Development Bank, which is a binational institution jointly financed and governed by the U.S. and Mexico that mainly supports water projects, and General Services Administration (GSA) appropriations to land border crossings on the U.S. side. Other funding programs may also be applied, such as from the U.S. Department of Transportation modal administrations, for example, Federal Highway Administration, Federal Railroad Administration, and Federal Motor Carriers Safety Administration. However, federal funding is not consistent—for instance, the Coordinated Border Infrastructure Program ended in 2009, and GSA appropriation amounts vary annually.

- **GSA Appropriations:** Texas land POEs have received approximately 10 percent of total GSA appropriations to land border crossings since 2002.¹ Yet, the Texas-Mexico border handles 76 percent of CMV and rail trade with Mexico, which is the U.S.' largest trading partner.

Funding and Financing since NAFTA: Although the passage of NAFTA in 1994 more than tripled cross-border trade up to the present day, only 10 border crossings along the Texas-Mexico border have been built or improved during this period. This amounts to $244.8 million in new border crossing construction and $45.1 million in border crossing reconstruction and improvements.2

State and Local Funding and Financing Sources: State and local funding dedicated to border crossing and/or transportation infrastructure includes Rider 11B, the Texas State Infrastructure Bank (SIB), Border Colonia Access Program, and local sources. The SIB is periodically funded for loans via authorization from the Texas State Legislature, but the Border Colonia Access Program has not been funded since 2009.

Private Funding and Financing Sources: Most bridges are built with private funding through either the sale of municipal revenue bonds bought by private investors or using private resources and investors. Tolls contribute to the repayment of bonds and, if local governments save revenues, can contribute to the construction costs for future facilities. There are a few private funding sources for border-related infrastructure, including the CBP Donation Acceptance Program and Reimbursable Services Program for staffing and other border operational needs, railroad investments in rail crossings and track infrastructure, and institutional investment for privately owned border crossings.

Sustainable funding for border crossings and transportation infrastructure are needed to support growing cross-border movements of people and goods both now and in the future.

5.2.2 Economic Competitiveness

Although the Texas-Mexico border generates $325 billion annually in GDP3 and 6.2 million jobs4 in the U.S. and Mexico, the economic potential of the border is not fully realized because of inefficiencies in border and multimodal transportation system planning, investments, management, and operations.

The Texas-Mexico border is integral to the economic competitiveness of national, state, regional, and local economies in the U.S. and Mexico.

However, inefficiencies at and along the border cost time and money. The top needs of cross-border supply chain industries include, but are not limited to, the following:

- Reduced border crossing times. Current delays are estimated to cause lost economic opportunity of over $2.7 billion per year of lost GDP to the U.S. and Mexican economies. Border delays can also create congestion that lead to transportation delays.

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2 TxDOT, "International Bridges and Border Crossings," 2019. Does not include all local funding sources.
3 $197 billion in the U.S. and $127 billion in Mexico (2017 nominal values).
4 1.8 million jobs in the U.S. and 4.5 million jobs in Mexico (2017 nominal values).
• Improvement in comprehensive U.S. and Mexico policy, program, and project coordination and investment. Some of these improvements include harmonizing U.S. and Mexican commercial motor vehicle (CMV) inspections and customs processing, harmonizing U.S. and Mexican requirements for certifying locomotive engineers and conductors, and support services to allow for the 24-hour operation of cross-border cargo movement.

• Efficient connecting infrastructure. Inefficient connecting infrastructure results in time-intensive routing for the cross-border movement of people and goods. These issues create significant barriers to the strategic planning, investment, and management required to develop more-connected, efficient transportation systems.

• Border facilities and a multimodal transportation system that are better prepared for and more responsive to potential disruptions. The current system leaves the nation, state, region, and local areas susceptible to the negative economic impacts of these disruptions. For instance, restrictions on nonessential travel due to COVID-19 has disrupted local economic activity along the border region, especially for the cross-border movement of people.

• Border facilities and a multimodal transportation system that can take advantage of opportunities to meet current and future demands and projected growth.

The efficient cross-border movement of people and goods is essential to the competitiveness of national, state, regional, and local industries and economies.

5.2.3 Cross-border Resiliency

The border transportation system remains susceptible to unforeseen disruptive events and needs updated resiliency planning.

The Texas-Mexico border crossings and multimodal transportation network require a comprehensive, aligned strategy to respond to system disruptions and to recover, restore, and repair the system after disruptions.

• The Rio Grande Valley flooding occurred following Hurricane Alex in 2010. Excessive rainfall in the Rio Grande River and its tributaries forced evacuations, road closures, and bridge closures along the border. Additionally, the floods caused major mudslides and crashes, which hampered freight rail traffic.

• A strong downdraft (similar to a tornado) hit Laredo/Nuevo Laredo in 2017, causing power outages, flooding, and structural damage at World Trade Bridge. This forced CMV traffic to be redirected to the closest border crossing (Laredo-Colombia Solidarity) 20 miles away.

• Hurricane Harvey led to the obstruction of 781 roads, the closure of 23 land and seaports, and the suspension of rail service in Texas during 2017. These closures impacted cross-border movement of people and goods across the border.

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5 FEMA, Historic Disaster Response to Hurricane Harvey in Texas, September 22, 2017.
The **migrant crisis** in 2019 redirected funding and personnel to managing the influx of northbound migrants. The crisis also caused temporary closures of some border crossings, including Gateway International and B&M. As a result, transportation system users saw border crossing times increase significantly.6

The recent **Hurricane Hanna** (2020) led to flash flooding and damage, causing road closures in south Texas and thousands of power outages in Corpus Christi, Laredo, and the Rio Grande Valley. Additionally, flooding damaged farm fields and orchards along the border.

**COVID-19** restrictions on nonessential travel between the U.S. and Mexico went into effect on March 21, 2020.7 The pandemic exposed response protocols and policy gaps along the border. For instance, there has been inconsistency in defining essential businesses; the general criterion determining which businesses may remain open.

**Peaceful demonstrations** at border crossings can block vehicle and pedestrian traffic, causing traffic to be diverted to the closest bridge nearby, underscoring the need for improved connectivity between border crossings.

**U.S. Environmental Protection Agency Cross-border Contingency Plans** between U.S. and Mexico border sister cities are over a decade old and do not reflect the new environmental best practices.

Border disruptions have become more frequent, making resiliency planning and preparedness even more important to better respond to and recover from potential future events.

### 5.2.4 Stewardship and Sustainability

Growing transportation demand contributes to environmental and community issues along the border.

Growth in transportation demand is fueled by population and economic growth both along the border and in the U.S. and Mexico. This impacts environmental and living conditions for border communities.

- **Local Congestion:** Where border traffic is not separated from local traffic, congestion builds up in communities in and along the border region. Operational and capacity improvements are needed to manage existing congestion and divert border traffic, including through bypass routes where possible, from local traffic to promote quality of life in border communities.

- **Safety Hot Spots:** The number of crashes and incidents is higher near the border due to increased traffic, conflicts between modes, and site-specific design issues. For example,

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border traffic is not separated between CMVs, POVs, and bike and pedestrian traffic in some areas, creating local safety risks.

- **Regional Air Quality:** Some communities, especially those located in the immediate vicinity of the crossings, can be exposed to elevated concentrations of particulate matter, ozone, and toxic air pollutants. The binational Border 2020 environmental plan identifies the need for harmonization in vehicle emission standards and regulations, policies to reduce vehicle idling, robust and systemic air monitoring, climate action plans, and energy efficiency and renewable energy uses.

- **Hazardous Materials and Waste Sites:** Cross-border trade also generates hazardous waste and other waste materials. The Border 2020 environmental plan lays out objectives for hazardous waste facilities and other waste sites generated by trade such as used cars, household appliances, tires, and others.

The U.S. Congress authorized $300 million in December 2019 to address untreated sewage flowing into border region rivers as part of the USMCA. However, there are no new federal funding streams for binational policies, programs, and projects to improve air quality in the border region.

As future transportation demand increases, policies and programs on environmental and community issues will become even more important.

### 5.2.5 Customer Service

Texas-Mexico stakeholder and public outreach, information, and engagement activities help raise awareness of the issues and needs of the border and multimodal transportation network.

Customer service includes understanding and incorporating customer feedback in decision-making processes and to be transparent in all agency communications. This requires engaging with Texas-Mexico groups at federal, state, regional, and local levels to raise awareness of and provide education about the importance of the Texas-Mexico border, in addition to the needs and issues of border crossings and the multimodal transportation network.

However, there are barriers to local and state stakeholders participating in decision-making on border planning, investments, management, and operations. Challenges include the following:

- Continued need for language translation services to overcome language barriers.
- Need for improved processes to identify, organize, and track issues and needs of customers.
- Need for improved procedures to track the use and success of customer engagement methods.
- Difficulty convening for large in-person meetings during the COVID-19 pandemic, causing a shift to web teleconferencing and other technology tools.
The BTMP development process brought together an unprecedented 2,800+ binational stakeholders to exchange ideas about the border. Continued outreach, information, and engagement activities are needed to raise awareness of new issues and challenges.

5.3 Mobility and Reliability Needs

Border crossing delays, roadway congestion, single-track rail infrastructure, and occupied rail crossings hinder the mobility and reliability of the borderwide transportation system.

These issues result from the growth in population, trade, and people movement that has outpaced the rate of infrastructure investment. This section outlines mobility and reliability issues impacting the border, highways, rail, and the multimodal transportation system. For each category, both operational efficiency and system capacity issues and needs are presented.

5.3.1 Border Crossing Delays

Border delays are due to high utilization rates across the Texas-Mexico border. Some crossings have operational efficiency issues; others have capacity constraints.

- **Operational Efficiency Issues:** Need for more robust and coordinated border management, advance and expand the broad integration and adoption of technologies, improved demand management, enhanced number of border inspection staff and hours of operation, need for improved distribution of POV and CMV traffic amongst existing lanes, need to expand expedited lane programs, need for standardized systems and streamlined procedures across border crossings, need for aligned processes between federal and state agencies, need for real-time traffic and border crossing information, and need for border inspection parking lots.

- **System Capacity Issues:** limited system capacity due to capacity constraints of existing border crossings and transportation network infrastructure, overutilization of existing border crossings, limited multimodal network capacity, need for comprehensive performance monitoring system for preventive maintenance and continuous improvement, and need for metrics-based system to allocate funding according to proven needs.

Border crossing delays are consistently higher for northbound trips compared with southbound trips, as shown in the Bridge of the Americas photograph at right.

Operational efficiency needs include a more comprehensive and coordinated border management strategy and the advanced and expanded broad integration and adoption of technologies. For example, technologies are needed to measure border wait times, facilitate the use of digital processes instead of paper, and monitor systems.
Expedited lane programs reduce delays while maintaining relative operational flexibility to switch between standard and expedited lanes once implemented.8

- **Ready Lanes:** dedicated processing lanes for both vehicle passengers and pedestrians traveling with Ready Lane–eligible travel cards.9
- **Secure Electronic Network for Travelers Rapid Inspection (SENTRI):** program that allows expedited clearance for preapproved, low-risk travelers entering the U.S.10
- **Free and Secure Trade (FAST):** commercial clearance program for known low-risk shipments entering the U.S., allowing expedited processing for commercial carriers that have completed background checks and fulfill certain eligibility requirements.11

<table>
<thead>
<tr>
<th>READY LANTES BIKE/PEDESTRIAN</th>
<th>SENTRI LANTES PASSENGER VEHICLE (POV)</th>
<th>FAST LANTES COMMERCIAL VEHICLE (CMV)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FASTER THAN standard lanes on average</td>
<td>FASTER THAN standard lanes on average</td>
<td>FASTER THAN standard lanes on average</td>
</tr>
<tr>
<td>33%</td>
<td>73%</td>
<td>50%</td>
</tr>
</tbody>
</table>

Many CMV border crossings also need longer hours of operation, as limited hours of operation increase delays by concentrating cross-border travel demand during certain hours of the day. Half of the POV crossings—but no CMV crossings—operate more than 20 hours per day.

![Figure 5.3-1. Border Crossings Open More Than 20 Hours per Day](image)

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8 Data in below graphic from CBP Fiscal Year 2016 Report on Business Transformation Initiatives.
9 U.S. CBP, Ready Lanes
10 U.S. CBP, Secure Electronic Network for Travelers Rapid Inspection
11 U.S. CBP, FAST: Free and Secure Trade for Commercial Vehicles

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Existing capacity can also be unevenly distributed between POV and CMV uses. This exacerbates border delays at certain crossings.

Most border crossings cannot operate at full capacity due to current staffing levels and the number of lanes that can be open at any given time.

Northbound highway border crossing utilization rates\(^{12}\) for the movement of goods (CMV) and the movement of people (POVs and bicyclists/pedestrians) are shown in the following sections.

- Utilization rates under 30 percent are considered underutilized and over 80 percent are considered overutilized, while 100 percent indicates that demand is higher than capacity.
- Average utilization rates over the last 5 years and the hypothetical 2050 utilization rates are illustrated in the following sections.
- 2050 forecasted utilization rates are based on mid-level forecasts and do not incorporate any border crossing projects that are currently not funded.

**Movement of People—POVs:** Northbound POVs declined 23 percent between 1996 and 2019 due in part to long wait times.\(^{13}\)

Many border crossings of all sizes need operational improvements or more physical capacity to meet POV needs.

**Small crossings:** Rio Grande City-Camargo has an operational utilization rate of 144 percent and might need operational improvements to accommodate projected growth to 227 percent by 2050.

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\(^{12}\) Utilization rates are reported as (1) volume-to-total capacity based on physical infrastructure, throughput assumptions from the CBP Business Transformation Initiatives report, and commercial throughput assumptions based on analysis of wait times; and (2) volumes-to-operational capacity based on the annual average number of lanes open during normal hours of operation for each border crossing from CBP’s border crossing volumes dataset 2014–2018.

Medium crossings:


- Two of these crossings also require additional physical capacity. The Free Trade Bridge is currently at 80 percent utilization based on total physical capacity available with a forecast of 139 percent utilization by 2050 based on total physical capacity. B&M is also currently at 88 percent utilization based on total capacity and is expected to increase to 105 percent by 2050.

![Figure 5.3-3. Medium POV Crossings (Part I) – Average Utilization Rates (2014–2018, 2050)](image)

![Figure 5.3-4. Medium POV Crossings (Part II) – Average Utilization Rates (2014–2018, 2050)](image)

**Movement of People—Bike/Pedestrian Crossings:**
Between 1996 and 2019, northbound bike/pedestrian movements increased by 18 percent from 16.9 million to 20 million.

To meet the needs of the growing border population, bike/pedestrian crossings will require operational improvements, and many also require additional physical capacity.14

**Small crossings:** Tornillo-Guadalupe International Bridge is underutilized for bike/pedestrian crossings at a 7 percent current operational utilization rate and is expected increase to 9 percent by 2050.

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14 Some data for small crossings are unavailable.
**Medium crossings:** B&M is overutilized by 119 percent and might require both operational improvements and additional physical capacity to accommodate future growth.

![Figure 5.3-7. Medium Bicycle/Pedestrian Crossings – Average Utilization Rates (2014–2018, 2050)](image)

**Large crossings:** Six large crossings are overutilized with over 80 percent volume-to-operational capacity, and require operational improvements: Paso del Norte with 111 percent, Ysleta-Zaragoza has 112 percent, Gateway to the Americas with 272 percent, McAllen-Hidalgo International has 121 percent, Progreso International has 94 percent, and Gateway International with 127 percent.

![Figure 5.3-8. Large Bike/Pedestrian Crossings – Average Utilization Rates (2014–2018, 2050)](image)

**Movement of Goods—CMVs:** Under NAFTA, cross-border U.S.-Mexico trade between 1994 and 2019 tripled from $173 billion to $615 billion,15 yet only a third of border crossings have received any investments during this time. This has led to overutilization of border crossings—especially medium and large CMV crossings.

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15 Adjusted to 2019 dollars.
The operational and physical capacity needs vary by crossing type and size.

**Small crossings** are generally underutilized. Some could require operational improvements.

- Progreso International currently operates at a utilization rate of 76 percent and might require both operational and physical capacity improvements to meet forecasted demand.
- Presidio is currently operating at a utilization rate of 47 percent. By 2050, Presidio is expected to grow to a 171 percent utilization and could require operational improvements.
- Rio Grande City–Camargo is currently operating at a utilization rate of 38 percent but is forecasted to grow to 156 percent. This crossing could require operational improvements.

![Figure 5.3-9. Small CMV Crossings – Average Utilization Rates (2014–2018, 2050)](image)

**Medium crossings** are all close to fully utilized, based on inspection staffing levels and the number of lanes open, and require operational improvements. Camino Real International requires both operational improvements and additional physical capacity.

![Figure 5.3-10. Medium CMV Crossings – Average Utilization Rates (2014–2018, 2050)](image)

**Large crossings** similarly are all overutilized, based on current inspection staffing levels and the number of lanes open, and require operational improvements. Pharr-Reynosa International Bridge on the Rise is currently operating at 114 percent utilization and is forecasted to increase to 356 percent by 2050. In addition to planned operational improvements, Pharr-Reynosa International Bridge on the Rise might also require additional physical capacity to accommodate continued trade growth.
World Trade Bridge is the only very large CMV crossing and has a utilization rate of 145 percent. The bridge requires both operational improvements and additional physical capacity to accommodate continued trade growth.

Appendix 5A provides a listing of operational and capacity needs by border crossings.

5.3.2 Roadway Delays (Congestion)

Congestion occurs across the borderwide region on facilities where transportation demand exceeds capacity—especially on key trade corridors and first- and last-mile connections to border crossings. Congestion is also influenced by design issues, by lane conflicts between POVs and CMVs, and by the need for mode choices causing traffic to concentrate on highways.

Roadway delays are most pronounced near border crossings and on key corridors. There are both operational efficiency and system capacity issues such as:

- **Operational Efficiency Issues**: need for updated transportation systems, need for improved traffic optimization strategies and technology, need for traffic separation (between CMVs, POVs, and pedestrians/bicycles), limited on-ramp and off-ramp lengths, opportunity to improve traffic signal control and coordination, need for enhanced and efficient alternative transportation choices, and need for connectivity for oversized and/or overweight vehicles.

- **System Capacity Issues**: need for updated roads, lanes, and intersections that are updated to current design standards and accommodate modern-day truck movements and turning radii, need for expanded lane capacity on current key roads, need for connections between key corridors and between border crossings, need for highway/rail grade separation, need for expanded alternative transportation choices and capacity, and need for enhanced truck parking capacity and staging.

The BTMP has 11 designated international multimodal corridors—six provide north-south connectivity and five provide east-west connectivity. Among these corridors, east-west corridors have the highest percentage of congestion.
Congestion currently occurs mainly near border crossings and urbanized areas. Border delays further generate congestion on Texas and Mexican roadways beyond border crossings. Congestion is expected to exacerbate, especially in dense metropolitan regions, without transportation investments to manage congestion issues.

The congestion issues in the designated multimodal transportation networks for the Texas border region are described in the following section by designated multimodal corridors, key regional roads, and the top congested segments. TxDOT car-space congestion data is used for corridors and regional roads—this dataset calculates the space between cars in 1-mile increments, factoring the number of lanes, annual average daily traffic (AADT), percentage of CMVs, and average car length. The calculated space between cars is categorized to illustrate levels of congestion. Additionally, the Texas Most Congested Roadways data is used for top congested segments in each region. This annual dataset measures congestion for more than 1,800 roadway segments in Texas.

Although Mexico congestion data is limited, information is available on daily traffic volumes in Ciudad Juárez as of 2015.

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**Figure 5.3-13. Texas Borderwide Congestion (2018)**

**Figure 5.3-14. Texas Borderwide Congestion (2050)**

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16 TxDOT Congestion Data (2018),

17 TxDOT Statewide Analysis Model (SAM), 2050 congestion.
El Paso/Santa Teresa/Chihuahua Region

The top congested corridors and regional roads are Interstate-10/Federal Highway (FH) 45 El Paso, Business Route (BU) 54, Loop 375, and I-110, due in part to population growth in the urban areas connected by these corridors and increased border crossings. The Presidio-Ojinaga emerging corridor by contrast does not encounter system-wide congestion.

The current top congested segments in the El Paso/Santa Teresa/Chihuahua Region are all near the border crossings; congested segments include N. Mesa St., Gateway Blvd., N. Zaragoza Rd., and more. Congestion issues occur in and around the border crossings due in part to cross-border traffic conflicts with local urban traffic.

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18 TxDOT Congestion Data (2018).
19 TxDOT SAM 2050 congestion.
Although Mexico congestion data is limited, information is available on daily traffic volumes in Ciudad Juárez as of 2015. This information is shown in Figure 5.3-17 for CMVs and POVs combined.

Figure 5.3-17. Ciudad Juárez Vehicle Density Service Levels (2015)

Laredo/Coahuila/Nuevo León/Tamaulipas Region

The Laredo/Coahuila/Nuevo León/Tamaulipas Region’s top congestion issues are within the urban areas near the border crossings. I-35/MEX 85 and Loop 20 are the top congested corridors and roads.
The current top congested segments in the Laredo/Coahuila/Nuevo León/Tamaulipas Region are all near the border crossings due to long border delays, the configuration of border crossings near urban centers, and site-specific design issues.

**Rio Grande Valley/Tamaulipas Region**

The Rio Grande Valley/Tamaulipas Region encounters significant congestion in Brownsville on I-69, I-2, US 281, and Loop 499. This is due to congestion at both the land border crossings in the region, as well as the Port of Brownsville which affects the connecting corridors.

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20 TxDOT Congestion Data (2018).
21 TxDOT SAM 2050 congestion.
Rapid urbanization in the Rio Grande Valley/Tamaulipas Region over the last few decades has led to increased congestion in its urbanized areas of Brownsville, Mission, and Edinburg. Congestion on the top congested segments in the region is due to border delays, increased traffic in urban areas, and design and operational issues on these segments.

CMV parking is needed near and at the border to accommodate unexpected delays from congestion or construction, as well as staging needs.

Unlike the automated process to enter the U.S., drivers wishing to re-enter Mexico must wait for paperwork to be processed, which can take several hours. This holding pattern requires drivers to find CMV staging near the border. In some cases, a driver might need long-term CMV parking if the required paperwork is not received before a POE facility closes or if the driver arrives after it has closed.

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22 TxDOT Congestion Data (2018).
23 TxDOT SAM 2050 congestion.
5.3.3 Connectivity

Similar to the roadway system, the demand on the Texas-Mexico multimodal transportation network has outpaced capacity, and in many cases, needs improved connection to the roadway system and other modes.

The border region provides direct access to Texas and Mexico seaports, primarily the Port of Houston, Corpus Christi, Brownsville, Matamoros, Altamira, Tampico, and Topolobampo as shown on Figure 5.3-22. The border regions are also connected to the 43 rail intermodal facilities in Texas and Mexico as shown in Figure 5.3-23.
Improved connectivity could enhance multimodal transportation options for the movement of people and goods. **Table 5.3-1** summarizes connectivity needs.

**Table 5.3-1. Borderwide Connectivity Issues**

<table>
<thead>
<tr>
<th>Borderwide Connectivity Issues</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Rail</strong></td>
</tr>
<tr>
<td>▪ Connectors to Texas and Mexico’s 43 intermodal rail facilities are becoming increasingly congested, especially on the U.S. side of the border in El Paso/Santa Teresa, Laredo, and Brownsville.</td>
</tr>
<tr>
<td><strong>Airport</strong></td>
</tr>
<tr>
<td>▪ Need for improved wayfinding between crossings and border region airports.</td>
</tr>
<tr>
<td>▪ Need for improved local connectivity between areas surrounding the regional airports with complementary developments such as air cargo storage facilities and cold storage.</td>
</tr>
<tr>
<td><strong>Seaport</strong></td>
</tr>
<tr>
<td>▪ Congestion occurs on east-west connections between seaports and border crossings. Current corridors could require upgrading to higher standards to meet the demands of increasing CMV-seaport movements.</td>
</tr>
<tr>
<td><strong>Sidewalk</strong></td>
</tr>
<tr>
<td>▪ Only 17 border crossings are connected with sidewalks.</td>
</tr>
<tr>
<td>▪ Bike and pedestrian gaps occur throughout the border region between major destinations such as schools, employment, and retail centers, near transit stops, and other destinations such as airports.</td>
</tr>
<tr>
<td>▪ Specific infrastructure issues include needs for improved lighting, overhead obstructions, expanded sidewalk capacity, conflicts with existing roadway traffic, drainage issues, enhanced signage, shielding from vehicle emissions, need for bike paths, and bike parking.</td>
</tr>
<tr>
<td><strong>Transit Service</strong></td>
</tr>
<tr>
<td>▪ Residents of the border regions express concerns about the frequency of transit service, bus delays, and wait times. Increasing the frequency of service is challenging in small- to medium-sized urban areas where fewer people depend on transit services.</td>
</tr>
<tr>
<td>▪ Transit services do not serve many bike/pedestrian crossings, making it more difficult to rely on alternative modes to cross the border.</td>
</tr>
</tbody>
</table>

### 5.3.4 Rail Border Crossings

Cross-border rail demand continues to increase. The number of northbound railcars increased by 305 percent from approximately 252,000 to 1 million between 1996 and 2019, and this number is expected to more than double to 2.6 million in 2050.\(^{24}\)

However, freight rail movement across the border is constrained by the border crossing rail bridges. These crossings are all single-tracked, meaning that two-way (north-south) simultaneous operations are not possible.

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\(^{24}\) BTMP mid-case forecast, 163 percent.
All five active freight rail bridges that connect Texas and Mexico are single-tracked, preventing simultaneous two-way operations and creating bottlenecks as trains queue in both directions. The following operational and system capacity needs are identified:

- **Operational Efficiency Needs:** need for improved efficiencies that could be gained by conducting unified (joint) rail inspections through the Unified Cargo Processing (UCP) program, U.S.-Mexico rail policy harmonization such as binational crew certification and binational Class I mechanical inspections, standardization and electronic transmittal of paperwork across ports of entry, improved screening technology for faster adjudication, and expanded train crossing hours of operation borderwide to allow for cross-border operation 24 hours per day.

- **System Capacity Needs:** need for expansions of single-track rail lines to double-track rail lines to improve operations, reductions in at-grade crossing traffic delays, accommodations for future growth, and additional opportunities to shift truck traffic onto rail.

U.S. and Mexican rail policies also constrain cross-border rail movements. For example, rail crews are currently required to switch at the border due to different U.S. and Mexico requirements for certifying locomotive engineers and conductors.

- In Laredo, crews delivering trains to the rail yard must be driven by a van to the border to pick up another train. Traffic congestion during the journey and any delays at the rail yard can result in crew changes that take between 2 and 3 hours.25

- Creating a pool of “international” rail crews would eliminate the need for crew changes. However, certifications, different operating rules, hours of service, labor and union concerns, and CBP capabilities for processing international crews are barriers to this approach. 26

Additionally, U.S.-Mexico policies on maintenance inspections are different. Mechanical and brake inspections of railcars performed in Mexico currently do not satisfy U.S. rail safety regulations.

Table 5.3-2 lists operational and physical capacity issues by rail border crossing.

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### Table 5.3-2. Operational and Physical Capacity Issues by Rail Border Crossing

<table>
<thead>
<tr>
<th>Border Crossing</th>
<th>Operational and Physical Capacity Issues</th>
</tr>
</thead>
</table>
| El Paso Rail Bridges (UP and BNSF) | ▪ Congestion and overutilization of single-track Ferromex rail line in Ciudad Juárez from the Ferromex rail yard to the border that connects to the BNSF and UP rail bridges.  
▪ Need for expanded rail capacity from the BNSF and UP rail lines crossing the border via Paso del Norte to the Ferromex rail line in Ciudad Juárez.  
▪ Need for a rail link from the UP rail yard in El Paso to Mexico in alignment with Route 136, Route 2, and Route 45D.  
▪ Need for expanded train crossing hours of operation to allow for cross-border operation 24 hours per day. |
| Presidio-Ojinaga International Rail Bridge (currently closed and being rehabilitated) | ▪ Regional rail capacity limited by the currently closed Presidio-Ojinaga International Rail Bridge.  
▪ Need for expanded train weight/speed allowances with improved infrastructure in addition to the recent upgrading of track sections leading to the rail bridge. |
| Eagle Pass Bridge (UP and BNSF Railway) | ▪ Congestion between the BNSF and UP sidings at Eagle Pass and need for CBP border security staffing at Eagle Pass.  
▪ Limited train speeds and limited freight capacity due to need for improved infrastructure and expanded track. |
| Laredo Texas Mexican Railway International Bridge (Kansas City Southern Railroad [KCS]) | ▪ Congested rail traffic flow across the border at Laredo. |
| Brownsville West Rail Bridge (Union Pacific Railroad [UP]) | ▪ Congestion and overutilization of single-track rail line at the West Rail border crossing. |

#### 5.3.5 Occupied Highway/Rail Crossings

Highway/rail crossings are an issue in all three border regions and particularly in El Paso/Ciudad Juárez and Laredo/Nuevo Laredo where high-volume rail lines traverse dense urban areas, resulting in congestion and safety issues.

**As trains reduce speed to cross the border for inspection and crew change, at-grade crossings can remain occupied.**

- **Operational Efficiency Issues:** highway/rail crossing conflicts.
- **System Capacity Issues:** highway/rail grade crossings and traffic delays along rail corridors.

Maximizing the operational efficiency of trains through rail ports of entry and decrease delays to the traveling public on both sides of the border.

A single stopped train can occupy all highway/rail crossings from the border to 2 miles north of the border.27

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Many highway/rail crossings are located in downtown areas and can increase traffic congestion when trains are stopped.

Brownsville’s new West Rail bridge, built in 2015, was the first rail bridge built in a century. This project relocated rail traffic away from downtown areas and eliminated 14 highway/rail crossings downtown, with only one highway/rail crossing remaining.

At-grade and highway/rail crossing issues by rail border crossing are listed in Table 5.3-3.

Table 5.3-3. At-grade and Highway/Rail Crossing Issues by Rail Border Crossing

<table>
<thead>
<tr>
<th>Rail Border Crossing</th>
<th>At-Grade and Highway/Rail Crossing Issues</th>
</tr>
</thead>
</table>
| El Paso Rail Bridges (UP and BNSF)                                                   | • El Paso/Ciudad Juárez rail crossing through the downtown area of Ciudad Juárez with four highway/rail crossings.  
• Congestion in the El Paso/Ciudad Juárez area, including due to restrictions of train crossings to 18 hours per day in Ciudad Juárez.                                                                                                                                 |
| Laredo Texas Mexican Railway International Bridge (KCS)                              | • Congestion in downtown Laredo due to 14 different highway/rail crossings in the region leading up to the Texas Mexican Railway International Bridge operated by Texas Mexican Railway (KCS).                                                                 |

5.4 Safety and Security Issues and Needs

Borderwide safety and security issues contribute to higher rates of roadway and rail crashes, incidents, injuries, and fatalities, especially near the border where the frequency and severity of crashes and incidents are higher.

Safety incidents are more likely near border crossings and involve autos, pedestrians, bicycles, and freight rail—often in situations where modes mix. The following could address these issues:

- **Operational Efficiency Needs**: improved operational efficiency with physical separation of lanes for CMVs at higher-traffic crossings, reduction of at-grade and grade road-rail crossings, reduction of freight rail corridor safety risks, and development of comprehensive performance monitoring system for continuous improvements and risk reduction.

- **System Capacity Needs**: improved system capacity with redesign of hot-spot locations for site-specific needs, enhanced capacity of hazardous materials and other specialized cargo processing at border crossings, improved infrastructure to support bicycle lanes and pedestrian right of way at border crossings and feeder routes, and development of comprehensive performance monitoring system for continuous improvement.

5.4.1 Border Crossing Safety

Physical separation between people and goods movement is needed at several border crossings that handle multiple modes.

- Safety conflicts are elevated in areas where CMVs and other modes mix.
The number of crashes close to border crossings is growing as roads accommodate higher traffic volumes and larger sizes of CMVs than they were originally designed to handle.

## Safety and Security

### 14 BORDER CROSSINGS PROCESS COMMERCIAL VEHICLES (CMV)

- **8 CROSSINGS HAVE SEPARATED TRUCK LANES**
- **8 CROSSINGS CAN ACCOMMODATE HAZARDOUS MATERIALS**
- **2 CROSSINGS ACCOMMODATE HAZARDOUS MATERIALS BUT DO NOT HAVE A SEPARATED TRUCK LANE**

### El Paso/Santa Teresa/Chihuahua Region

The region has the following border crossing safety issues:

- Border crossings need enhanced capacity to handle hazardous materials in the El Paso/Santa Teresa/Chihuahua Region.
- Border crossings need enhanced pedestrian and bike infrastructure, particularly at border crossings and connecting roads.
- Need for Complete Streets, streets designed and operated to enable safe use and support mobility for all users, which would better connect surrounding streets with heavily used bike and pedestrian border crossings in El Paso to improve user experience and reduce crashes.

### Laredo/Coahuila/Nuevo León/Tamaulipas Region

The region has the following border crossing safety issues:

- Laredo-Colombia Solidarity, which also processes hazardous materials, is a higher-volume CMV crossing that needs a separate CMV lane to allow separated CMV and POV traffic.
- The region’s two border rail crossings, located in urban areas, cause complex challenges to the expansion of rail facility solutions for mitigating highway/rail conflicts.
- Border crossings in the region need enhanced capacity to handle hazardous materials.

### Rio Grande Valley/Tamaulipas Region

The region has the following border crossing safety issues:

- Pharr-Reynosa International Bridge processes hazardous materials but needs separation between CMV and POV lanes.
- There are conflicts between CMVs, POVs, and bike/pedestrian activity focused on hot-spot locations, particularly at border crossings and at connecting roads that require site-specific design improvements.

---

5.4.2 Roadway Safety

Hot-spot crash locations on first- and last-mile roads hinder network mobility, reliability, and connectivity of the movement of people and goods throughout the Texas-Mexico border region.

- At-grade rail crossings create conflicts with roadway vehicle traffic.
- Higher road crash densities are concentrated in downtown areas.
- Crashes are frequently caused by POV and CMV conflicts due to differences in travel speeds.

There are more frequent, and sometimes more severe, crashes near the border that involve pedestrians, cyclists, and CMVs.

Roadway crash data is shown in Figure 5.4-1.

- Crashes that involve bikes and pedestrians are more common on the Mexican side of the border, but bike and pedestrian crashes have a higher fatality rate on the Texas side of the border. Within one mile of the border on the Texas side, the number of crashes that involved bicyclists and pedestrians increased substantially between 2015 and 2019 over the rest of the border region and Texas more generally.
- The CMV crash rate is substantially higher in the Laredo/Coahuila/Nuevo León/Tamaulipas Region on the Texas side of the border region. Within 1 mile of the border, the number of CMV crashes in the Rio Grande Valley/Tamaulipas Region rose significantly between 2015 and 2019.

El Paso/Santa Teresa/Chihuahua Region

Regional roads such as I-10 and Loop 375 have hot-spot locations at connections where southbound traffic merges onto I-10 heading to the border.

- **Highest POV crash rate:** the POV crash rate for the region is higher than statewide at 340 crashes per 100 million vehicle miles traveled (VMT) compared to 258 crashes per 100 million VMT between 2015 and 2019.
- **Lower CMV crash rate:** the CMV crash rate is 147 crashes compared to 258 crashes per 100 million VMT, lower than the statewide crash rate of 258 crashes per 100 million VMT between 2015 and 2019.
- **Bike/pedestrian crash percentages** are lower than statewide percentages at 1.3 percent of total crashes, compared to 1.5 percent statewide between 2015 and 2019.

El Paso/Santa Teresa and/Chihuahua Region roadway crash data is shown in (Figure 5.4-2). Roadway crash density in Ciudad Juarez is concentrated in the urban centers, as shown in Figure 5.4-3.
Figure 5.4-1. Roadway Crash Density, Texas Borderwide Region (2015–2019)\textsuperscript{29}
Figure 5.4-2. Roadway Crash Density, El Paso/Santa Teresa/Chihuahua Region (2015–2019)


30

- **Active highway/arterial speed harmonization** on regional roads (I-10, I-35, US 83, and I-69) is needed to reduce CMV/auto conflicts.

- **Higher POV crash rate:** the POV crash rate in the region is higher than the statewide crash rate at 309 crashes per 100 million VMT, compared to the statewide crash rate of 258 crashes per 100 million VMT between 2015 and 2019.

---

- **Lower CMV crash rate**: the CMV crash rate in this region is 125 crashes per 100 million VMT, lower than the statewide CMV crash rate of 145 crashes per 100 million VMT between 2015 and 2019.

- **Bike/pedestrian crash percentages**: bike/pedestrian crash percentages are lower than statewide percentages at 1.3 percent of total crashes, compared to 1.5 percent statewide between 2015 and 2019.

Figure 5.4-4. Roadway Crash Density, Laredo/Coahuila/Nuevo León/Tamaulipas Region (2015–2019)\(^\text{32}\)

\(^{32}\) Automated Crash Data Extract Files, TxDOT (2015–2019).
2021 | Texas-Mexico Border Transportation Master Plan

Rio Grande Valley/Tamaulipas Region

Regional corridors (I-2, I-69C, I-69E, and connecting roads) have hot-spot locations in the McAllen, Harlingen, and Brownsville downtowns.

- **Active highway/arterial harmonization** on regional roads is needed to reduce CMV/POV conflicts.
- **Higher POV crash rate**: the POV crash rate in the region is higher than the statewide crash rate at 325 crashes per 100 million VMT, compared to the statewide crash rate of 258 crashes per 100 million VMT between 2015 and 2019.
- **Higher CMV crash rate**: the region experienced 155 CMV crashes per 100 million VMT between 2015 and 2019. This is higher than the statewide crash rate of 145 crashes per 100 million VMT.
- **Bike/pedestrian crash percentages**: bike/pedestrian crash percentages are higher than statewide percentages at 2.6 percent of total crashes, compared to 1.5 percent statewide between 2015 and 2019.

*Figure 5.4-5. Roadway Crash Density, Rio Grande Valley/Tamaulipas Region (2015–2019)*

5.4.3 Rail Safety

Rail incidents occur at areas of highway/rail conflicts often due to at-grade crossings, particularly in urban areas.

El Paso/Santa Teresa/Chihuahua Region

The region has the following rail safety issues:

- **Outside Pecos**, clusters of hot spots occur at intersections where at-grade rail crossings run closely parallel to (less than 100 feet from) intersections with major I-20 frontage roads.
- **Highway/rail infrastructure and operational issues** lead to increased incidents, particularly in hot-spot locations.

Figure 5.4-6. El Paso/Santa Teresa/Chihuahua Region At-grade Rail Crossing Incidents in Texas (2007–2017)³⁴

---

Laredo/Coahuila/Nuevo León/Tamaulipas Region

The region has the following rail safety issues:

- **Between San Antonio and Laredo**, clusters of hot spots occur at intersections where at-grade rail crossings run closely parallel to (less than 100 feet from) intersections with major I-35 frontage roads.

- **The two rail border crossings** are located in urban areas and make it difficult to expand rail facility solutions to mitigate highway/rail conflicts.

---

Rio Grande Valley/Tamaulipas Region

The region has the following rail safety issues:

- A significant number of at-grade rail crossings are located on the dense urban street network surrounding the McAllen International Airport.

---

5.5 Asset Preservation Issues and Needs

Asset preservation issues include pavement conditions, bridge conditions, border crossing conditions, and border inspection facility conditions. Although these assets are, on average, in fair condition, systematic preventive maintenance is needed to prevent deterioration.

- **Maintenance and Modeling**: Best practices for modeling deterioration and system monitoring are not consistently used to determine maintenance priorities.
- **Consistent Funding Sources**: Need for consistent funding sources for border crossings to preserve assets.

5.5.1 Pavement Conditions

Pavement conditions in the border region on average are in good condition. Poor conditions are concentrated near border crossings and on key corridors. Preservation and systematic preventive maintenance and rehabilitation on Texas border region roads are needed to ensure the safe and efficient movement of people and goods.

- **Comprehensive Asset Preservation**: Pavement asset preservation is led by TxDOT districts, and there is a need for a comprehensive statewide pavement management approach.
- **Systematic Preventive Maintenance and Rehabilitation**: Pavements in the border region will deteriorate to poor conditions without preventive maintenance, potentially due to the current Texas pavement-deterioration model.

The proportion of pavements classified as in poor condition is over two times higher within 1 mile of the border compared to the greater border region.

<table>
<thead>
<tr>
<th></th>
<th>Designated BTMP Corridors</th>
<th>Regional Roads</th>
</tr>
</thead>
<tbody>
<tr>
<td>Border region</td>
<td>6%</td>
<td>9%</td>
</tr>
<tr>
<td>1 mile from the border</td>
<td>19%</td>
<td>19%</td>
</tr>
</tbody>
</table>

The next pages illustrate pavement needs by each of the three Texas-Mexico border regions.

---

37 TxDOT Pavement Conditions Data (2018); TxDOT 2018 Report on Texas Bridges; TxDOT Bridge Conditions Data (June 2020); National Bridge Inventory, FHWA, TxDOT; GAO Report to Congressional Requesters, “Border Infrastructure: Actions Needed to Improve Information on Facilities and Capital Planning at Land Border Crossings,” July 2019; Class I railroad interviews.

38 TxDOT Pavement Conditions Data (2018).

El Paso/Santa Teresa/Chihuahua Region

Poor pavement conditions as a percent of road length within the region are summarized below:

- 7 percent of I-10
- 4 percent of I-10/FH 45 El Paso
- 8 percent of Presidio-Ojinaga corridor
- 8 percent of regional roadways
- 26 percent of regional roads 1 mile from the border

Figure 5.5-1. El Paso/Santa Teresa/Chihuahua Region Pavement Conditions (2018)\textsuperscript{40}

\textsuperscript{40} TxDOT Pavement Conditions Data (2018).
Laredo/Coahuila/Nuevo León/Tamaulipas Region

Poor pavement conditions as a percent of road length within the region are summarized below:

- 11 percent of I-27/FH 57
- 4 percent of I-35/FH 85
- 3 percent of Laredo I-69
- 10 percent of regional roadways
- 18 percent of regional roads 1 mile from the border

Figure 5.5-2. Laredo/Coahuila/Nuevo León/Tamaulipas Region Pavement Conditions (2018)\(^\text{41}\)

\(^{41}\) TxDOT Pavement Conditions Data (2018).
Rio Grande Valley/Tamaulipas Region

Poor pavement conditions as a percent of road length within the region are summarized below:

- 3 percent of Brownsville I-69
- 10 percent of regional roads
- 13 percent of regional roads 1 mile from the border

Figure 5.5-3. Rio Grande Valley/Tamaulipas Region Pavement Conditions (2018)42

---

42 TxDOT Pavement Conditions Data (2018).
5.5.2 Bridge Conditions

Texas maintains the largest bridge inventory in the nation yet has the smallest percentage of structurally deficient bridges at 1.3 percent. Among the Texas border region’s 2,616 bridges, 2.2 percent are structurally deficient and 5.6 percent are functionally obsolete.

- **Comprehensive Asset Preservation**: Need for a comprehensive bridge management approach.
- **Systematic Preventive Maintenance and Rehabilitation**: Need for preventive maintenance to reduce deterioration of numerous bridges to structurally deficient conditions.
- **System Monitoring**: Need for frequently updated information on bridge conditions in Mexico.

On average, 92 percent of Texas bridges in the border region are in good or better condition.

![Figure 5.5-4. Texas Border Region – On-system Bridge Conditions (2018)](image)

**Regions**

<table>
<thead>
<tr>
<th>Regions</th>
<th>Functionally Obsolete</th>
<th>Structurally Deficient</th>
<th>Good or Better</th>
<th>Percent Good or Better</th>
</tr>
</thead>
<tbody>
<tr>
<td>El Paso/Santa Teresa/Chihuahua Region</td>
<td>93</td>
<td>3</td>
<td>931</td>
<td>90.7%</td>
</tr>
<tr>
<td>Laredo/Coahuila/Nuevo León/Tamaulipas Region</td>
<td>54</td>
<td>2</td>
<td>811</td>
<td>93.5%</td>
</tr>
<tr>
<td>Rio Grande Valley/Tamaulipas Region</td>
<td>0</td>
<td>52</td>
<td>670</td>
<td>92.8%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>147</strong></td>
<td><strong>57</strong></td>
<td><strong>2,412</strong></td>
<td><strong>92.2%</strong></td>
</tr>
</tbody>
</table>

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43 Structurally deficient structure: A bridge is classified as structurally deficient if it meets any of the following criteria: it has an extreme restriction on its load-carrying capacity; it has deterioration severe enough to reduce its load-carrying capacity beneath its original as-built capacity; it is closed; or it is frequently overtopped during flooding, creating severe traffic delays. Note: Though the U.S. Federal Highway Administration (FHWA) still uses the term “structurally deficient,” it is moving toward using the terms Good, Fair, and Poor to describe bridge conditions. Poor has the same meaning as structurally deficient, but the change in nomenclature will likely take years given that the existing terminology has been institutionalized throughout the bridge community (from TxDOT, Report on Texas Bridges, 2018).

44 Functionally obsolete structure: A bridge is classified as functionally obsolete if it fails to meet current design criteria in any one of the following areas: deck geometry; load-carrying capacity; vertical or horizontal clearances; or, approach roadway alignment. Note: FHWA no longer uses the term “functionally obsolete.” TxDOT is still using “functionally obsolete” to identify structures eligible for funding but will be considering alternate nomenclature (from TxDOT, Report on Texas Bridges, 2018).

45 TxDOT Bridge Condition Data, inspection years range from 2012–2019. Includes only on-system bridges. Poor condition means advanced section loss, deterioration, spalling, or scour.

46 Good or better structure: A good or better structure meets current federal and Texas requirements. It is not structurally deficient, functionally obsolete, or substandard for load only. Desirable change in good or better structures from year to year is reflected by positive numbers, showing an increase in sufficient structures (from TxDOT, Report on Texas Bridges, 2018).

47 TxDOT 2018 Report on Texas Bridges.
Bridge inventories by region vary by functional classification—the class/group of roads to which the road belongs—that is, interstate, principal arterial, etc.

Figure 5.5-5. Texas Border Region– Bridges by Functional Classification (2020)\(^{48}\)

\(^{48}\) TxDOT Bridge Conditions Data (June 2020).
El Paso/Santa Teresa/Chihuahua Region

The region has the following bridge conditions:

- Poorer conditions such as structurally deficient or functionally obsolete, are concentrated in El Paso downtown area and near border crossings.
- Four bridge structures have low vertical clearance under 14 feet.

Figure 5.5-6. El Paso/Santa Teresa/Chihuahua Region Bridge Conditions (2020)49

49 TxDOT Bridge Conditions Data (June 2020).
Laredo /Coahuila/Nuevo León/Tamaulipas Region

The region has the following bridge conditions:

- Poorer conditions such as structurally deficient or functionally obsolete are concentrated on I-35 and I-35 connectors.
- Four bridge structures have low vertical clearance under 14 feet.

Figure 5.5-7. Laredo/Coahuila/Nuevo León/Tamaulipas Region Bridge Conditions (2020)
Rio Grande Valley/Tamaulipas Region

The region has the following bridge conditions:

- Poorer conditions such as structurally deficient or functionally obsolete are concentrated in urban areas and near border crossings.
- Two bridges have low vertical clearance under 14 feet.

Figure 5.5-8. Rio Grande Valley/Tamaulipas Region Bridge Conditions (2020)
5.5.3 Border Crossing Conditions

In contrast to Texas pavements and bridges, border crossings have no consistent asset management funding sources to ensure adequate maintenance over time.

- More than two-thirds of border crossings are in fair condition and could deteriorate to poor conditions without a formalized asset maintenance funding program to systematically repair and rehabilitate crossings over time.
- Fort Hancock–El Porvenir is the sole border crossing currently in poor condition.

National Bridge Inventory, FHWA, TxDOT. The following crossings are not included in this analysis due to unavailable data: Lake Amistad Dam, Rio Grande City-Camargo, Lake Falcon Dam, B&M, and Progreso International. Bridge spans are counted separately due to different ratings.

Good, Fair, Poor: These terms are defined in accordance with the Pavement and Bridge Condition Performance Measures final rule, published in January 2017. Bridge condition is determined by the lowest rating of National Bridge Inventory (NBI) condition ratings for Item 58 (Deck), Item 59 (Superstructure), Item 60 (Substructure), or Item 62 (Culvert). If the lowest rating is greater than or equal to 7, the bridge is classified as Good; if it is less than or equal to 4, the classification is Poor. Bridges rated 5 or 6 are classified as Fair (from FHWA, National Bridge Inventory).
Most CBP border inspection facilities are in good or fair condition.\textsuperscript{52}

- As of 2019, 50 percent of CBP inspection facilities were in good condition.\textsuperscript{53}
- Border inspection facilities at the Lake Falcon Dam Crossing and McAllen-Hidalgo International border crossings currently rate in poor condition\textsuperscript{54} and require infrastructure improvements.
- Eight CBP border inspection facilities\textsuperscript{55} along the Texas-Mexico border have not had facility condition assessments conducted by CBP and the U.S. Government Accountability Office (GAO).

\nopt{5.4 Rail Crossings}

All rail crossings are currently in good serviceable condition.\textsuperscript{56}

- The U.S. Federal Railroad Administration requires rail border crossings to go through annual inspections of each structure and for railroads to maintain safe load capacity on record.
- Some railroads might also inspect some rail lines more often depending on traffic and condition.

Annual inspections and reports indicate whether a rail crossing is safe for current traffic and can safely support the loadings in both weight and mass.

Rail intermodal facility conditions are unavailable. However, these facilities also require maintenance over time to ensure they can sufficiently facilitate CMV/rail movements.

\nopt{5.6 Summary of Findings}

Border crossings serve a confluence of pedestrians, bikes, buses, POVs, CMVs, and trains that support everyday life in the border region, across the state, and throughout the North American tri-national economy. In this environment of activity, there is an opportunity for improvement.

Careful and consistent planning and coordination among U.S. and Mexico federal, state, local, and private partners—including new technologies; data collection, harmonization, sharing, and analysis; and system monitoring—is needed to meet the objectives of all BTMP goals.

\textsuperscript{52} Condition based on facility condition index (0-10% good, 10-20% fair, 20-30% poor, and 30-100% critical). The facility condition index is a ratio of the costs to correct the facility deficiencies divided by the total replacement cost of the facility. (from GAO Report to Congressional Requesters, “Border Infrastructure: Actions Needed to Improve Information on Facilities and Capital Planning at Land Border Crossings,” July 2019, p.30)


\textsuperscript{56} Class I railroad interviews.
These time and resource investments will improve conditions for the Texas-Mexico border regions and the broader network so they can continue to support the majority of U.S.-Mexico trade and facilitate the movement of people and goods through 28 Texas-Mexico vehicle crossings, the Santa Teresa crossing, and 6 rail crossings, multimodal corridors, and supporting POE facilities.

The next chapter outlines strategies and recommendations to address these identified needs.
TEXAS-MÉXICO
BORDER TRANSPORTATION
MASTER PLAN

Plan Maestro de
Transporte Fronterizo

Chapter 6
Future Forecasts for the Texas-Mexico
Border Region
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Chapter 6  Future Forecasts for the Texas-Mexico Border Region

With the implementation of the North American Free Trade Agreement (NAFTA) in 1994, the Texas-Mexico border became vitally important to the economies of the United States and Mexico. The Texas-Mexico border is now North America’s busiest trade gateway as the movement of goods across the Texas-Mexico border has more than tripled from $111 billion in 1994 to $451 billion in 2019. Mexico is the U.S.’ largest trading partner, and 70 percent of trade between the two countries passes through the Texas-Mexico border.

The Texas-Mexico border region will continue to grow in the future with improvements in personal incomes, opportunities for trade growth with the implementation of the U.S.-Mexico-Canada Agreement (USMCA), and the potential for post Coronavirus Disease 2019 (COVID-19) pandemic trade restructuring.

The movement of people across the border is also very important. It facilitates social, business, and cultural ties between Texas and Mexico as people travel across the border to work, visit family, shop, take vacations, use medical facilities, and engage in many other activities.

As the movements of people and goods across the border continue to increase, border infrastructure will become constrained. This will exacerbate border crossing times and a loss of economic productivity. Without the efficient flow of people and goods, the competitiveness of trade between the U.S. and Mexico will be negatively impacted.

This chapter discusses forecasts of future conditions in 2050 along the Texas-Mexico border, including socioeconomic, the movement of people and goods, border crossings and multimodal transportation infrastructure, and system performance. These forecasts are inputs to assessing the economic impacts of future conditions along the border (Chapter 7), identifying and evaluating strategies to address current and future needs along the Texas-Mexico border region (Chapter 8), developing recommendations (Chapter 10), and creating an implementation plan (Chapter 11).

Future socioeconomic factors in the border region influence the movement of people and goods across the Texas-Mexico border. As population and employment increase, so do the movements of people and goods across the border. The forecast of future socioeconomic factors reflect a continuation of the trends established over the last two decades.

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1 Dollar estimates reflect 2019 dollars.
2 The border region is defined as 60 miles north and south of the border (Sphere 1).
### Forecast Socioeconomic Factors In the Border Region (2050)

<table>
<thead>
<tr>
<th>Population</th>
<th>Borderwide population forecast to increase 19 percent from 7.4 million residents in 2019 to 8.8 million residents.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employment</td>
<td>There will be continued employment growth in the border region. In the Texas border region, employment is forecast to increase by 72 percent from 1.2 million in 2019 to 2.0 million in 2050. Employment is also forecast to continue to grow in Mexico.</td>
</tr>
<tr>
<td>Income</td>
<td>For the Texas border region, annual median income growth is forecast to increase 23 percent from $41,250 in 2018 to $50,701 in 2050 (in 2019$), and poverty rates are also forecast to decline.</td>
</tr>
<tr>
<td></td>
<td>Incomes in the Mexico border states are also forecast to grow.</td>
</tr>
<tr>
<td>Education</td>
<td>Texas border region high school and college/technical school graduation rates are forecast to increase.</td>
</tr>
<tr>
<td></td>
<td>More Mexico border residents are expected to complete secondary and upper education because of compulsory upper secondary education policies due to Educación Media Superior Obligatoria enacted in 2012.</td>
</tr>
<tr>
<td>Trade</td>
<td>Ratification of the USMCA continues to improve economic competitiveness developed under NAFTA. The agreement will undergo a review every 6 years to ensure the effectiveness of the USMCA.</td>
</tr>
<tr>
<td></td>
<td>COVID-19 results in a short-term trade decline but provides the potential near-shoring(^3) of manufacturing which is forecast to increase trade between the U.S. and Mexico in the longer term.</td>
</tr>
</tbody>
</table>

### 6.1 Forecast Methodology

The forecasts of the movement of people and goods reflect a continuation of the prevailing historical trends observed since 1995 and represent the most likely future for the Texas-Mexico border.

The characteristics of border-crossing trips along the Texas-Mexico border differ between personal travel and freight travel. Personal travel is highly influenced by local and regional characteristics because of the shorter distances traveled by people crossing the border. Unlike the movement of people, goods crossing the Texas-Mexico border tend to travel longer distances, with origins and destinations distributed throughout the U.S. and Mexico. These movements are linked more directly to national and international economic trends and tend to be less sensitive to regionally specific characteristics.

Planning-level forecasts were developed for 2050, consistent with the forecast year for the Texas Transportation Plan 2050. These forecasts are called the mid-case forecast. Alternative scenarios for

\(^3\) Nearshoring is the relocation of business operations from a distant country to a nearby country. In this case, U.S. manufacturing operations could potentially relocate from Asia to Mexico.
low-case and high-case forecasts are described later in this chapter. The forecasts do not account for potential modal shifts in the future and therefore assume that people and goods move across the border in the future as they do today.

The overall purpose of the forecasts is to identify future needs. As a result, the forecasts do not explicitly take into account future infrastructure investments and are unconstrained forecasts. The 2050 forecasts are presented along with actual border crossing data for 2019 to provide a long-term perspective. The forecasting approach used for this analysis is consistent with other planning reports and research.

**Mid-case Forecast Assumptions (2050)**

- **Employment will continue to grow in border regions.** In the Texas border region, employment is forecast to increase by 72 percent from 1.2 million in 2019 to 2.0 million in 2050. These employment forecasts are based on the *Texas Statewide Analysis Model – Fourth Version (SAM-V4)*. Employment in the Mexico border region also is expected to grow, consistent with prevailing trends.

- **Over the long run, the economies of the U.S. and Mexico will recover from the 2020 recession (called the Great Lockdown by the International Monetary Fund) due to the COVID-19 pandemic.** U.S. economic growth as measured by gross domestic product (GDP) is forecast to average 1.7 percent annual growth based on forecasts from the Organisation for Economic Co-operation and Development representing cumulative growth from 2019 of 67 percent. The Mexican economy is also forecast to grow.

- **Currencies and fuel prices will be stable reflecting prevailing trends.** Over the long run to 2050, it is assumed that exchange rates and fuel prices (in real terms) will remain stable or at current levels. For fuel prices, this is consistent with forecasts from the U.S. Energy Information Administration.

- **Existing trade policies, including the USMCA, are expected to continue.** It is assumed that existing policies that influence the movement of people and goods across the border remain in place.
**Forecasting Methodology**

- **Obtained forecasts of the movements of people and goods developed by ports of entry (POEs).**
  - People: number of people, passenger vehicles (POV), buses, pedestrians
  - Goods: CMVs, rail cars, tons, value

- **Conducted trend analysis at the POE level of border crossings and socioeconomic factors.**
  For the movement of people, local employment in the border region is the best predictor. For the movement of goods, national economic activity, as measured by GDP, is the best predictor.

- **Collected forecasts of socioeconomic variables to form a mid-case or “most likely” forecast.**
  This included data from the U.S. Bureau of Transportation Statistics (BTS), SAM-V4, Texas Demographic Center, the Energy Information Administration, and the Organisation for Economic Co-operation and Development.

- **Allocated forecasts of movements from POEs to border crossings.**
  Forecasts of movements were allocated to existing border crossings.

- **Developed estimates of tonnage and value of goods based on the demand for commodities.**

- **Calibrated forecasts to other sources.**

- **Validated forecasts against those developed by other sources** including the 2018 Texas Freight Mobility Plan, Freight Analysis Framework (FAF4), TRANSEARCH forecasts, Federal Highway Administration study border forecasts (Scenario Planning of Future Freight and Passenger Traffic Flows Across the U.S./Mexico and U.S./Canada Borders, Final Report/White Paper, U.S. Department of Transportation, 2016), and metropolitan planning organization long-range plans.

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4 POEs are designated crossing points along the Texas-Mexico border. Each POE can include multiple border crossings.
6.2 Population

The Texas-Mexico border region’s population is projected to grow from 7.4 million in 2019 to 8.7 million in 2050, an increase of 19 percent. The future population growth rate for the border region in Texas is slower than that of the entire State of Texas. In general, population growth in the future is lower than historical population growth for both the region and Texas as birth rates decline.

- Population in the border region is projected to grow from:
  - Texas: 3.1 million in 2019 to 3.5 million in 2050, an increase of 16 percent
  - Four Mexican border states: 4.4 million in 2019 to 5.2 million in 2050, an increase of 21 percent

- This represents a slower growth rate compared to that observed in the past. Growth rates are anticipated to slow down on both sides of the border compared to historical trends.

- Historically, population has not been a good predictor of the cross-border movement of people. While the border region population grew through 2019, the movement of people through the border declined more than 50 million between 1996 and 2019.

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6.3 Employment

Employment will continue to grow to 2050 on both sides of the border. For the Texas border region, annual employment is forecast to grow from 1.2 million in 2019 to 2.0 million in 2050, an increase of 72 percent, driving the potential for increased movement of goods and people across the Texas-Mexico border. This growth is about the same as historical averages from 1990 to 2019 and is slightly higher than that expected for the state of Texas in the future. Employment is also expected to grow in the Mexico border region.

- The Texas-Mexico border region outpaced employment growth since 1990, in comparison to U.S. and Mexico national growth rates during the same period. This trend is expected to continue for the forecast period, with Texas border region employment outpacing that of the state of Texas.
- International trade-dependent industries employ a third of total employees in Texas border counties.
- The recently ratified USMCA generates greater certainty in U.S. and Mexico bilateral trade markets, which encourages investment in infrastructure, facilities, and operations along the border region, supporting employment growth.
- All border regions are expected to experience significant employment growth to 2050, with the Rio Grande Valley/Tamaulipas Region expecting the fastest growth.

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Figure 6.3-1. Texas-Mexico Border Region Employment (1995–2050)\(^6\)

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6.4 Income

Median income will continue to grow to 2050 on both sides of the border. For the Texas border region, annual median income is projected to grow from $41,250 in 2018 to $50,701 in 2050, expressed in 2019 dollars, which is an increase of 23 percent, which is similar to state of Texas income growth and comparable to income growth since 1990.

- All three regions in Texas are expected to experience income growth to 2050, with the Laredo/Coahuila/Nuevo León/Tamaulipas Region expecting the fastest growth, outpacing growth in the Texas border region.

6.5 Education

Prevailing trends in secondary and post-secondary education in the Texas-Mexico border region are expected to continue between 2019 and 2050.

- Texas border region high school and college/technical school graduation rates continue to increase between 2019 and 2050.
- More Mexico border residents are expected to complete secondary and upper education because of compulsory upper secondary education policies due to Educación Media Superior Obligatoria enacted in 2012.
6.6 National Economic Activity and International Trade

National economic activity, as measured by the GDP of the U.S. and Mexico, is the key driver of cross-border trade growth. Most of the goods movement that crosses the Texas-Mexico border is “through” movement; that is, most northbound movements are destined for locations other than Texas, and most southbound movements do not originate in Texas. Therefore, national, rather than state or regional factors drive the movement of goods.

This contrasts with the movements of people that originate and end within 60 miles of the border region and are influenced by local conditions.

At the time of this report, the global economy is in the middle of what the International Monetary Fund refers to as “The Great Lockdown” due to the COVID-19 pandemic,\(^8\) the worst economic downturn since the Great Depression. However, in the most likely scenario and over the long run, economic and trade growth is expected to be robust, and the fallout from the pandemic could result in additional economic opportunities for the U.S. and Mexico and more integrated trade between the U.S. and Mexico.

- **In 2019, Mexico became the U.S.’ largest trading partner as measured by the value of goods traded with $621 billion in trade.** Approximately 76 percent of U.S.-Mexico CMV and rail trade were processed at a Texas-Mexico border crossing in 2019.
- **The U.S. and Mexican economies are expected to recover after the COVID-19 pandemic and grow strongly between 2019 and 2050.** U.S. economic growth is expected to average 1.7 percent and Mexico 2.3 percent from 2019 to 2050.\(^5\) Trade growth is expected to outpace overall economic growth in the forecast horizon.
- **The post-pandemic recovery could see some goods production return to North America from Asia as national economies look to ensure the resiliency of key supply chains in the future.**

6.7 Forecasts of Binational Total Trade 2019–2050

The combination of strong economic growth and the implementation of the USMCA is forecast to result in a tripling of the value of trade between the U.S. and Mexico by 2050. The value of goods traded is forecast to increase faster than its tonnage, due to the faster growth in higher-value supply chains, such as high technology.

The significance of the Texas-Mexico border to the U.S. and Mexican economies is shown by the value of trade processed at the border. Across all modes, the total value of all trade is forecast to increase from $451 billion to $1.5 trillion (in 2019 dollars), by 2050. Ninety-five percent of this trade crosses the Texas-Mexico border by CMV or rail.

The value of all trade increases by 234 percent from 2019 to 2050.

The majority of total trade value is Mexican exports to the U.S. However, on a volume basis, only 45 percent of total volume is northbound. This reflects higher-value cargoes being exported to the U.S. from Mexico.

In 2050, most of the goods being moved across the Texas-Mexico border are not expected to have an origin or destination in Texas. In fact, 59 percent of all cross-border tonnage is forecast to be moving through Texas.

The ratification of the USMCA reduces uncertainty and encourages investment in trade-related infrastructure in the border region. The USMCA is expected to raise U.S. GDP by $68.2 billion and U.S. employment by 176,000 jobs. While the agreement will have a positive impact on most sectors of the U.S. economy, manufacturing and agriculture will experience the largest gains in output, exports, wages, and employment.

Several supply chains are forecast to grow significantly to 2050. High technology is forecast to grow in value by about 5 percent annually to $659 billion. Mexico’s emergence as a mini-hub for the design and manufacture of high technology products at a low cost led to many U.S. companies establishing operations in Mexico as opposed to overseas. Foodstuffs and vegetable products also are expected to record strong growth.

Most of the tonnage as well as the value of goods crossing the border northbound by CMV or rail goes through Texas to other U.S. states. Only 27.0 million tons, or 17 percent, of all northbound tonnage is destined for locations within the Texas border region. For southbound movements, the proportion of through traffic is even higher with 144 million tons, or 74 percent, of all southbound volumes originating outside of Texas.

The movement of goods includes goods that may have originated outside Mexico and the U.S. (e.g., Canada).

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One of the fastest-growing supply chains crossing the Texas-Mexico border in both directions is high technology equipment. This supply chain is forecast to account for over $659 billion in trade by 2050.

Future Forecasts for the Texas-Mexico Border Region
6.8 Forecasts of Northbound Border Crossing Movements

6.8.1 Forecasts of Northbound Texas-Mexico Cross-border Movement of People, 2019–2050

Forecasts of Northbound Texas-Mexico Cross-border Movement of People

Approximately 112.4 million people are forecast to cross the Texas-Mexico border in 2050, a 30 percent increase of 26.1 million from the 86.3 million people that crossed in 2019.11

Most of these people cross the border in passenger vehicles (POVs). The movement of people is broadly dispersed across the three regions, with each region accounting for more than 30 million people movements in 2050.

Forecasts of Northbound Texas-Mexico Cross-border Movement of People by POVs

POV movements are forecast to increase by 36 percent from 32.8 million in 2019 to 44.5 million by 2050. The greatest increase, which is 48 percent, is forecast to happen in the Rio Grande Valley/Tamaulipas Region. The El Paso POE has the greatest number of forecast people in POV movements at 27.6 million in 2050. Three other POEs are forecast to have more than 10 million people in POVs in 2050: Laredo, Brownsville, and Hidalgo.

10 Throughout this chapter, all estimates of “movements” reflect northbound with historical data based on data from the Bureau of Transportation Statistics. Southbound movements are comparable.

11 The forecasted border crossing volumes in 2050 represent unconstrained volumes that were estimated at the individual border-crossing level. Potential diversion of volumes between nearby border crossings due to future crossing conditions is not accounted for as part of this analysis.
In 2050, four border crossings are forecast to have more than 3 million POV movements per year: Ysleta-Zaragoza, Bridge of the Americas, Juárez-Lincoln, and McAllen-Hidalgo International.
Forecasts of Northbound Texas-Mexico Cross-border Movement of Bicycles and Pedestrians

Bicycle and pedestrian movements are forecast to increase from 20.0 million in 2019, to 23.0 million to 2050, or 15 percent. Four POEs are forecast to account for 85 percent of these movements: El Paso, Laredo, Brownsville, and Hidalgo. The Rio Grande Valley/Tamaulipas Region is forecast to be the fastest-growing region for these movements.
By 2050, four border crossings will have more than 2 million bicycle and pedestrian crossings: Paso del Norte, Gateway to the Americas, McAllen-Hidalgo International, and Gateway International.

**Figure 6.8-10. Northbound Bicycle and Pedestrian Movements by Border Crossing (2019 and 2050)** (for border crossings with more than 100,000 bicycle and pedestrian crossings in 2050)

Forecasts of Northbound Texas-Mexico Cross-border Movement of People by Buses, 2019–2050

Bus movements are forecast to remain stable out to 2050, with a slight decline of 0.1 percent cumulative decline from 90,000 in 2019 to 88,000 in 2050. Bus movements include both local cross-border and longer haul cross-border movements. Almost half of total bus movements travel through the Laredo/Coahuila/Nuevo León/Tamaulipas Region. In 2050, 95 percent of these movements are forecast to be concentrated in four POEs: Laredo, Hidalgo, El Paso, and Brownsville.
6.8.2 Forecasts of Goods Movement by Mode, 2019–2050

Cross-border CMV Trade

The value of goods moved by CMV across the Texas-Mexico border is forecast to surpass $1.2 trillion by 2050, a 257 percent increase from $342 billion in 2019.
Eighty-one percent of total multimodal trade, or $1.2 trillion, crossing the border is forecast to be moved by CMV in 2050, a 5 percentage point increase from 2019, highlighting the importance of effective border infrastructure and processes to facilitate trade and economic growth in both the U.S. and Mexico.

- The value of goods moved by CMV is forecast to grow faster (257 percent cumulatively) than tonnage (240 percent cumulatively) from 2019 to 2050.
- Almost half of the value of goods is forecast to move through the Laredo/Coahuila/Nuevo León/Tamaulipas Border Region.
- Four different POEs are forecast to surpass $100 billion in annual trade by CMV by 2050: Laredo, El Paso, Hidalgo, and Santa Teresa (note: the POE names reflect the U.S. Customs and Border Protection [CBP] classification and naming convention).
Figure 6.8-16. CMV Tonnage by Region (2019 and 2050)

Figure 6.8-17. CMV Trade Value by Region (2019 and 2050)

Figure 6.8-18. Total CMV Tonnage by POE (2019 and 2050)

Figure 6.8-19. Total CMV Trade Value by POE (2019 and 2050)

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12 Note: Santa Teresa is included in the El Paso/Santa Teresa/Chihuahua Region.

Future Forecasts for the Texas-Mexico Border Region 6-17
Forecasts of Cross-border CMV Movements, 2019–2050

CMV movements are forecast to grow by 168 percent to 2050 from 4.6 million in 2019 to 12.3 million in 2050.\(^\text{13}\)

- The Rio Grande Valley/Tamaulipas Region experiences the fastest growth in CMV movements.
- More than half of all CMV movements cross the Texas-Mexico border through the Laredo/Coahuila/Nuevo León/Tamaulipas Region.

\(^{13}\) The forecasted border crossing volumes in 2050 represent unconstrained volumes that were estimated at the individual border-crossing level. Potential diversion of volumes between nearby border crossings due to future crossing conditions is not accounted for as part of this analysis.
The World Trade Bridge is anticipated to process the largest number of CMVs with 5.1 million movements in 2050. This represents 42 percent of total CMV movements across the Texas-Mexico border. Three other border crossings are forecast to have at least 1 million annual movements in 2050: the Pharr–Reynosa International Bridge on the Rise, Ysleta Zaragoza, and Laredo Colombia Solidarity.

![Figure 6.8-23. CMV Movements by Border Crossing (2019 and 2050)](image)

Forecasts of Cross-border Rail Movements, 2019–2050

Both the value and volume of rail trade is forecast to grow by more than 165 percent between 2019 and 2050. The value of goods moved by rail will be $209.9 billion by 2050, compared to $74.8 billion in 2019.

- The majority of goods movement by rail in terms of both tonnage and value moves through the Laredo/Coahuila/Nuevo León/Tamaulipas Region.
- By 2050, the Eagle Pass Rail Bridge is forecast to have more goods by tonnage moving through than any other rail crossing. However, the Laredo Rail Bridge is forecast to have the most goods by value at $112.8 billion. This is because Laredo is a hub for high-value and low-tonnage supply chains such as motor vehicles, whereas Eagle Pass will experience growth in high-tonnage and low-value supply chains such as foodstuffs and vegetable products.
The Presidio-Ojinaga International Rail Bridge is currently closed and is scheduled to reopen in 2021.
Forecast of Cross-border Rail Car Movements

Rail car movements are forecast to more than double from 1,021,000 in 2019 to 2,555,000 in 2050, a cumulative increase of 150 percent. The Laredo/Coahuila/Nuevo León/Tamaulipas Region and specifically the Laredo Rail Bridge and Eagle Pass Rail Bridge account for more than 80 percent of these movements in 2050.

Note the POEs listed in the graphs above correspond to the following rail border crossings: Laredo – Laredo Texas Mexican Railway International Bridge; Eagle Pass – Eagle Pass Bridges; El Paso – El Paso Rail Bridges; Brownsville – West Rail Bridge; and Presidio – Presidio-Ojinaga International Rail Bridge.
Summary Forecasts of Goods Movements by Mode

Most of the goods that move across the Texas-Mexico border move by CMV. By 2050, 229 million tons or 65 percent of all land based tonnage is forecast to move by CMV compared to 47 million tons in 2019. An even greater proportion, 83 percent of total trade value, is forecast to move across the border by CMV, in 2050. By 2050, the value of goods moved by CMV across the border is forecast to exceed $1.2 trillion compared to $342 million in 2019.

Figure 6.8-33. Trade Tonnage by Mode (2019 and 2050)

Figure 6.8-34. Trade Value by Mode (2019 and 2050)

CMV movements are essential for the production sharing required for Just-In-Time (JIT) deliveries in the integrated supply chains that drive most of the cross-border trade. This is especially so for lighter, but high-value components, such as in high technology. Bulkier items that travel long distances, such as motor vehicles are moved mostly by rail.

Figure 6.8-35. Trade Tonnage by Mode and Supply Chain (2050)

Figure 6.8-36. Trade Value by Mode and Supply Chain (2050)
6.9 Forecasts of Roadway Corridor Movements

6.9.1 Roadway Capacity

Roadway capacity, as measured by lane miles, is forecast to grow 10 percent in the Texas border region, from 29,951 lane miles in 2018 to 32,900 lane miles in 2050. The largest-capacity growth of 41 percent is in principal arterials.

Figure 6.9-1. Texas Border Region Lane Miles (2018 and 2050)\(^{15}\)

![Figure 6.9-1](image1)

Figure 6.9-2. Texas Border Region Lane Miles by Functional Class (2018 and 2050)\(^{16}\)

![Figure 6.9-2](image2)

6.9.2 Roadway Vehicle-miles Traveled

Vehicle-miles traveled in the Texas border region is forecast to grow by 95 percent from 69.1 million VMT in 2018 to 134.6 million VMT in 2050. The fastest growth is forecast to occur on the Texas side of the Rio Grande Valley/Tamaulipas Region with an increase of 124 percent.

Figure 6.9-3. Texas Border Region VMT by Region (2018 and 2050)\(^{17}\)

![Figure 6.9-3](image3)

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\(^{17}\) TxDOT Roadway Inventory Data (2018). SAM-V4 (2050).
6.10 Forecasts for Other Modes

Forecasts for air, maritime, and pipeline movements are estimated based on a consensus view of forecasts from both internal and external sources, to achieve a holistic forecast of the Texas-Mexico multimodal transportation network.

6.10.1 Aviation System

Air cargo volumes between Texas and Mexico are forecast to grow 600 percent from 18,600 tons in 2019 to 130,300 tons in 2050. The value of this cargo is forecast to grow faster reflecting the high-value products such as electronics being shipped by air cargo in the future.

\[ \text{Figure 6.10-1. Air Cargo Tonnage (2019 and 2050)}^{18} \]

\[ \text{Figure 6.10-2. Air Cargo Trade Value (2019 and 2050)} \]

6.10.2 Pipeline Network

Pipeline tonnage will increase by 341 percent from 11.8 million in 2019 to 52.0 million in 2050. The majority of these movements will continue to be southbound shipments of natural gas and other petroleum products from Texas, mainly from the Rio Grande Valley/Tamaulipas Region.

\[ \text{Figure 6.10-3. Pipeline Tonnage (2019 and 2050)}^{19} \]

\[ \text{Figure 6.10-4. Pipeline Trade Value (2019 and 2050)} \]

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6.10.3 Maritime System

Maritime tonnage is forecast to grow 65 percent from 68.4 million tons in 2019 to 112.6 million tons in 2050. Overall value shipped by maritime is forecast to double, reflecting trade growth in petroleum products and chemicals.

![Figure 6.10-5. Maritime Tonnage (2019 and 2050)](image)

![Figure 6.10-6. Maritime Trade Value (2019 and 2050)](image)

6.11 Forecasts of System Performance

6.11.1 Border Crossings

Forecasts of POV Crossing Times

In contrast to CMVs, POV growth to 2050 is forecast to be more moderate, which leads to less escalation in crossing times. Three of the small crossings are forecast to experience no increase in future crossing times; however, crossing times at the majority of the border crossings are forecast to increase dramatically, with the highest reaching 8 hours, highlighting the need for future improvements. Note that these forecasts are unconstrained.


21 Personal vehicle border crossings leveraged 2019 crossing times from INRIX. Fort Hancock–El Porvenir Bridge used 2019 CBP wait times due to unavailable data from INRIX.

22 The forecasted border crossing times in 2050 assume current (2019) processing levels observed at the individual border crossings, with no operational or capacity improvements between now and the year of the forecast. These future forecasts would change if improvements are implemented at border crossings between now and 2050.
**Large Crossings**

- Average crossing times were 34 minutes or less for each of the five large crossings in 2019. 90th percentile crossing times were much higher, with the highest being 60 minutes at McAllen-Hidalgo International Bridge.
- By 2050, all the five large crossings are forecast to experience increases in average crossing times, with an average of 135 minutes, or over 2 hours.
- The Ysleta–Zaragoza Bridge is forecast to have the biggest percent change in average and 90th percentile crossing times, with increases of 144 minutes, or over 2 hour, and 236 minutes, or reaching 4 hours, respectively. This is equivalent to 576 percent cumulative growth.

**Figure 6.11-1. Large Crossing Average Crossing Times – POVs (2019 and 2050)**

**Figure 6.11-2. Large Crossing 90th Percentile Crossing Times – POVs (2019 and 2050)**
Medium Crossings

- Of the 15 medium crossings, average crossing times were 43 minutes or less in 2019. 90th percentile crossing times in 2019 were as high as 69 minutes at the Anzalduas International Bridge.
- All medium crossings are forecast to experience large increases in crossing times by 2050.
- B&M Bridge, Gateway International Bridge, and Veterans International Bridge at Los Tomates are forecast to be the top three border crossings that will experience the highest crossing times in 2050. Average crossing times are forecasted to range from 6 to 8 hours, and the 90th percentile crossing times range from 9 to 13 hours in 2050.
The majority of small crossings are not forecast to experience crossing time increases from 2019 to 2050.

- Rio Grande City–Camargo Bridge is the only border crossing that shows significant increases in average and 90th percentile crossing times, with increase of 105 minutes and 150 minutes (485 percent cumulative growth) respectively.
Forecasts of CMV Crossing Times

The almost tripling of CMV movements by 2050 will strain the border processing capabilities at border crossings. CMV crossing times, both average and 90th percentile, are forecast to increase dramatically by 2050. For many of the larger crossings, the average crossing times will be 3 to 9 hours in 2050. At one of the large crossings, the Pharr-Reynosa International Bridge on the Rise, the average crossing time will exceed 14 hours in 2050.

The analysis of commercial crossing times is organized by the size of border crossing. Future crossing times are forecast using a queuing model and the unconstrained demand forecast. The queuing model determines how crossing times might change as a result of higher future traffic volumes without any improvements at each crossing. That is to say, the forecast 2050 crossing times assume that operating hours, staffing levels, traffic patterns, and the number of lanes remain at 2019 levels.

Very Large Crossings

- The World Trade Bridge is the only very large crossing.
- The 2019 crossing time at the World Trade Bridge averaged 30 minutes with the 90th percentile reaching 53 minutes.
- The World Trade Bridge shows an increase in CMV crossing times between 2019 and 2050, with average crossing time increasing by 497 minutes (1,655 percent cumulative growth) to 527 minutes, and 90th percentile crossing time by 877 minutes, which is a 1,655 percent cumulative growth to 930 minutes or 15.5 hours.
- The average crossing time at the World Trade Bridge is forecast to exceed 8 hours in 2050.

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23 The following commercial border crossings leveraged 2019 crossing times from BCIS: Bridge of the Americas; Ysleta – Zaragoza Bridge; Pharr – Reynosa International Bridge on the Rise; Veterans International Bridge at Los Tomates; Laredo – Colombia Solidarity Bridge; World Trade Bridge; Camino Real International Bridge and Santa Teresa/San Jerónimo. The remaining commercial border crossings used 2019 crossing times from INRIX.

24 90th percentile crossing times reflect a crossing time that is met or exceeded 10 percent of the time.

25 The forecasted border crossing times in 2050 assume current (2019) processing levels observed at the individual border crossings, with no operational or capacity improvements between now and the year of the forecast. These future forecasts would change if improvements are implemented at border crossings between now and 2050.
Large Crossings

- The 2019 average crossing times were 56 minutes at the Ysleta–Zaragoza Bridge and 60 minutes at the Pharr–Reynosa International Bridge on the Rise.
- Both the Ysleta–Zaragoza Bridge and Pharr–Reynosa International Bridge on the Rise are forecast to experience significant increases in the average crossing time between 2019 and 2050, by 395 minutes, a 706 percent cumulative growth and 789 minutes, a 1,315 percent cumulative growth, respectively.
- The average crossing times in 2050 are forecast to reach almost 8 hours for the Ysleta–Zaragoza Bridge and are over 14 hours for the Pharr-Reynosa International Bridge on the Rise, with the 90th percentile crossing times reaching more than 18 hours.
Medium Crossings

- 2019 crossing times for each of the 6 medium crossings averaged 44 minutes or less, and 90th percentile crossing time were 81 minutes or less.
- All of medium crossings are forecast to experience high average and 90th percentile crossing times in 2050.
- Camino Real International Bridge, Del Rio–Ciudad Acuña International Bridge, and Santa Teresa/San Jerónimo are forecast to be the top three border crossings experiencing the largest increase in average crossing times. Crossing times are forecast to increase by 7 to 9 hours.
- Camino Real International Bridge is forecast to experience the greatest change in average crossing times, from 8 minutes in 2019 to 572 minutes in 2050, equivalent to 7,050 percent cumulative growth.
- The average crossing times for the top two congested border crossings are forecast to be over 500 minutes, or 9 hours in 2050.

Small Crossings

- Each of the five small crossings had an average crossing time of 32 minutes or less and 90th percentile crossing time of 58 minutes or less in 2019.
- Three out of the five border crossings are forecast to experience significant changes in crossing times between 2019 and 2050: Rio Grande City–Camargo Bridge, Progreso International Bridge, and Free Trade Bridge, with over 2 hours in average crossing time, and over 6 hours in 90th percentile crossing time in 2050.
- Free Trade Bridge is forecast to experience the greatest increase in average crossing times, 184 minutes, or over 3 hours, between 2019 and 2050.
6.11.2 Forecast Highway Corridor Congestion

Highway congestion is summarized in Chapter 5. The BTMP has 11 designated international multimodal corridors—six provide north-south connectivity and five provide east-west connectivity. Among these corridors, east-west corridors have the highest percentage of congestion. Currently, congestion occurs mainly near border crossings and urbanized areas.

- In the El Paso/Santa Teresa/Chihuahua Region, top congested corridors and regional roads are Interstate (I) 10/Federal Highway (FH) 45 El Paso, Business Route (BU) 54, Loop 375, and I-110, due in part to population growth in the urban areas connected by these corridors and increased border crossings.
- The Laredo/Coahuila/Nuevo León/Tamaulipas Region’s top congestion issues are within the urban areas near the border crossings. I-35/MEX 85 and Loop 20 are the top congested corridors and roads.
- The Rio Grande Valley/Tamaulipas Region encounters significant congestion in Brownsville on I-69, I-2, US 281, and Loop 499. This is due to congestion at both the land border crossings in the region, as well as the Port of Brownsville which affects the connecting corridors.

As travel demand increases at a rate greater than capacity does, roadway congestion escalates quickly. Vehicle delay is expected to increase substantially. By 2050, congestion is forecast to be a major issue across the multimodal corridor network, as many roadways are congested.
Forecasts of Highway Crashes

Crashes are forecast to grow 80 percent from 16,429 in 2017 to 29,595 in 2050, driven by the 108 percent cumulative increase in vehicle-miles traveled.

Figure 6.11-15. Texas Border Region Highway Crashes with Injuries and Fatalities (2017 and 2050)

Forecasts of Rail Crashes

Between 2008 and 2017, rail incidents declined 42 percent on the Texas side and remained constant on the Mexico side of the border region. Rail incidents on the Mexico side were more stable over that period. By 2050, cross-border rail car movements are expected to grow 150 percent. Therefore, if historical incident rates persist, the number of incidents on each side of the border could reach 100 annually.

Figure 6.11-16. Texas-Mexico Border Region Rail Incidents (2008–2017)

---


6.12 Low-case and High-case Forecast Scenarios

In addition to the mid-case forecasts for 2050 presented previously in this chapter, low-case and high-case scenarios were developed based on alternate views of some factors affecting the movement of people and goods across the border. Overall, people movements grow at lower rates than goods movement over the forecast horizon.

The alternative scenarios are developed to test the robustness of the 2050 mid-case forecast findings— the forecast results show that there will be large increases in goods movement in the future, resulting in extraordinarily high crossing times by 2050.

**Forecast Assumptions for Low-case and High-case Scenarios (to 2050)**

- **The low-case scenario forecast is based on slower economic growth and more restrictive border policies:**
  - Slower annual U.S. national economic growth, or 1.6 percent per year, than the mid-case forecast, which is 1.8 percent per year.
  - Slower border region employment growth of 1.3 percent per year than the mid-case.
  - Devaluation of the peso, 40 percent, as experienced in the late 1990s.
  - Restrictive border and trade policies limit cross-border movements, a 25 percent reduction, similar to that experienced after implementation of passport requirements for crossing the U.S. land border under the Western Hemisphere Travel Initiative in 2009. These policy changes could be for security and health reasons.

- **The high-case scenario forecast is based on faster economic growth, higher economic growth, and facilitative border policies:**
  - Faster employment growth, 2.4 percent per year, than the mid-case forecast of 2.1 percent per year.
  - Faster national economic growth, 2 percent per year, than the mid-case of 1.8 percent per year.
  - Appreciation of the peso by 20 percent.
  - Greater trade integration, a 10 percent increase, such as that experienced after NAFTA implementation.
  - Additional infrastructure investments.

6.12.1 Forecast Scenario Results for the Movement of People

The movement of people (by POVs, pedestrians, and bus) in 2050 in the low case is forecast to be 21.5 million (25 percent) lower than 2019 levels, and in the high case is forecast to be 55.9 million (65 percent) higher than 2019 levels.
In the low-case scenario, the movement of people in 2050 is forecast to be 64.8 million crossings, corresponding to 47.6 million, or 42 percent less than, the mid-case forecast.

In the high-case scenario, the movement of people in 2050 is forecast to be 142.2 million, corresponding to 29.8 million, or 26.5 percent more than the mid-case forecast, putting additional strain on border infrastructure.

**Figure 6.12-1. Scenario Analysis – Movement of People (2050)**

<table>
<thead>
<tr>
<th></th>
<th>Movement of People (2050)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2019</td>
<td>86.3</td>
</tr>
<tr>
<td>Low</td>
<td>64.8</td>
</tr>
<tr>
<td>Mid</td>
<td>112.4</td>
</tr>
<tr>
<td>High</td>
<td>142.2</td>
</tr>
</tbody>
</table>

### 6.12.2 Forecast Scenario Results for the Movement of Goods

In all scenarios examined, growth in the movement of goods is forecast to strain border infrastructure in 2050.

Even in the low-case scenario, the cross-border movement of goods by CMV is forecast to more than double 2019 levels, putting significant additional strain on border infrastructure. In the high-case scenario, CMV movements are forecast to more than triple, and rail container movements nearly triple, driving the need for additional capacity. With greater economic integration between the U.S. and Mexico, an efficient border is critical for the economies of both countries. Regardless of the scenario, there will be considerable growth in goods movement to 2050, resulting in rapidly escalating border delays.
### 6.13 Summary of Findings

The Texas-Mexico border is vitally important to the economies of border regions, Texas, U.S. and Mexico. This border is now North America’s busiest trade gateway, as the movement of goods across the Texas-Mexico border has more than tripled in value, from 1994 to $451 billion in 2019. Mexico is the U.S.’ largest trading partner and 70 percent of trade between the two countries pass through the Texas-Mexico border. The Texas-Mexico border region will continue to grow in the future, with improvements in incomes, opportunities for trade growth with the implementation of USMCA, and the potential for post-COVID-19 pandemic trade restructuring.

The GDP of both the U.S. and Mexico is the key driver of cross-border trade growth. Most of the goods movement that crosses the Texas-Mexico border is “through” movement; most northbound movements are destined for locations other than Texas, and most southbound movements do not originate in Texas. Therefore, national, rather than state or regional, factors drive the movement of goods. This contrasts with the movements of people, which originate and end, within 60 miles of the border region, and are therefore, more influenced by local factors.

### Low-case scenario forecasts (2050):
- CMV movements are forecast to be 9.3 million, corresponding to 4.7 million, or 103 percent more than in 2019.
- Rail car movements are forecast to be 1.8 million, corresponding to 0.8 million or 79 percent more than in 2019.

### High-case scenario forecasts (2050):
- CMV movements are forecast to be 14.5 million, corresponding to 9.8 million or 215 percent more than in 2019.
- Rail car movements are forecast to be 2.8 million, corresponding to 1.8 million or 176 percent more than in 2019.
The combination of strong economic growth and the USMCA results in a most likely forecast that has triple the value of trade between the U.S. and Mexico by 2050. Coincident with the growth in trade is growth in both CMV and rail movements.

- The value of goods moved by CMV across the Texas-Mexico border is forecast to surpass $1.2 trillion by 2050, a 257 percent increase from $342 billion in 2019. CMV movements are forecast to grow by 168 percent in 2050 from 4.6 million in 2019 to 12.3 million in 2050.
- 81 percent of total trade crossing the border will be moved by CMV, a 5 percentage point increase from 2019, highlighting the importance of effective border infrastructure and processes to facilitate trade and economic growth in both the U.S. and Mexico.
- Both the value and volume of rail trade are forecast to grow by more than 165 percent between 2019 and 2050. The value of goods moved by rail is forecast to be $210.0 billion by 2050, compared to $74.8 billion in 2019.

By 2050, 112.4 million people are forecast to cross the Texas-Mexico border, an increase of 26.1 million (30 percent) from the 86.3 million people crossing in 2019. Most of these people cross the border in POVs.

The forecast tripling of CMV movements by 2050 strains processing capabilities at border crossings. CMV crossing times, both average and 90th percentile, are forecast to increase dramatically by 2050, with average crossing times forecast to exceed 7 hours for the Very Large and Large Border Crossings.

Without border infrastructure improvements, border crossing times will escalate to unmanageable levels putting at risk the economic competitiveness of trade between the U.S. and Mexico. Without efficient border infrastructure, this trade could move to other countries, resulting in fewer jobs and lower incomes in both countries.

The additional border crossing movements will also have impacts on communities near the border as congestion, noise levels and air quality may be impacted.

The next chapter outlines the economic importance of the border and the impact of increasing border delays on the economies of the U.S. and Mexico. The forecasts presented in this chapter will be used in future chapters to identify network and system needs, and to develop strategies to address current and future demands.
Chapter 7

Economic Importance of the Texas-Mexico Border
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Chapter 7 Economic Importance of the Texas-Mexico Border

This chapter describes the economic importance of the Texas-Mexico border now and in the future by identifying the impacts to the United States and Mexican economies from the movement of people and goods through the Texas-Mexico border and costs of congestion and delays at the border. The chapter builds on the past and present of the Texas-Mexico border as presented in Chapter 3 and the unconstrained mid-case forecasts of the movement of people and goods presented in Chapter 6. The information presented provides the economic context for policymakers to make informed decisions about transportation investments, policies, and programs for meeting objectives and promoting future growth and prosperity. All monetary values (present and future) are shown in 2019 dollars.

The Texas-Mexico border is North America’s busiest trade gateway and has been integral to the economic growth of the U.S. and Mexico.

Mexico became the U.S.’ largest trading partner in 2019. Since the ratification of the North American Free Trade Agreement (NAFTA), the movement of goods across the Texas-Mexico border has more than tripled from $111 billion in 1994 to $451 billion in 2019 (representing 73 percent of the $615 billion in trade between the U.S. and Mexico). With the value of trade moving across the Texas-Mexico border expected to triple again by 2050 (as presented in Chapter 6), the border will play an even greater role in the U.S. and Mexican economies in the future.

The Texas-Mexico border is an economic engine for the U.S. and Mexico. As described in Chapter 3, the movement of people and goods across the border has resulted in significant growth in employment, population, incomes, and education levels borderwide. Moreover, goods moved across the Texas-Mexico border support over seven million jobs across the U.S. and Mexico and contribute $343 billion annually to the Gross Domestic Product (GDP) of both countries. These trade impacts are spread throughout the U.S. and Mexico. Mexico is either the number one or number two trading partner with 28 U.S. states. As a result, the movement of goods across the border is important at national, state, and regional levels.

An important impact of NAFTA has been the development of cross-border supply chains benefiting from the abundance of Mexican labor and U.S. technology.

These supply chains are especially prevalent in higher value-added manufacturing products such as durable goods. Much of the economic strength from these supply chains is related to Mexican manufacturing production, where businesses in Mexico and the U.S. are partners in cross-border manufacturing through production sharing, in which the two countries work together to build products. This results in goods moving across the border multiple times, with any border delays adding costs to production.

At the same time, the movement of people across the border facilitates social, business, and cultural ties between Texas and Mexico, particularly in the Texas-Mexico border region. People travel across the border to work, attend schools and colleges, visit family, shop, take vacations, use medical
facilities, or engage in many other activities. Expenditures by people crossing the border add more than $9 billion annually to the borderwide economy in Texas and Mexico.

### 7.1 Economic Impact Analysis Methodology

The methodology for estimating economic impacts relies on economic multipliers that take into account the relationships among industries.\(^1\) Two types of impacts are estimated: 1) the impact of the Texas-Mexico border on the economy, and 2) opportunities lost because of congestion and delays at the border affecting the movement of people and goods. The analysis is conducted at several geographic levels: 1) the national impact on U.S. and Mexico, 2) the impact on Texas and Mexican border states (Chihuahua, Coahuila, Nuevo León, and Tamaulipas), and 3) the impact in the Texas-Mexico border region within 100 miles of the Texas-Mexico border.\(^2\) Impacts are reported in terms of GDP, employment, and labor income. In addition, the analysis of opportunities lost due to congestion considers the value of time to travelers and economic productivity losses to operators. All economic impacts are estimated in 2019 dollars and numbers reported may not add to the totals because of rounding.

#### 7.1.1 Methodology for Estimating the Impacts of the Cross-border Movement of Goods and People

The movement of goods across the Texas-Mexico border allows the U.S. and Mexico to exchange goods as part of integrated supply chains. These exchanges have effects that ripple through the economies of both countries. In addition, the movement of goods across the border encourages economic development. Foreign Trade Zones (FTZs) and Recintos Fiscalizados on the U.S. and Mexican sides of the border help attract offshore companies to Texas and the Mexican border states. Economic development impacts are not directly considered in the economic impact methodology.\(^3\)

The movement of people across the Texas-Mexico border generates economic activity on both sides, particularly within the Texas-Mexico border region. As people spend more money while traveling across the border, they increase GDP, jobs, and personal income in the visiting country. The magnitude of these increases depends on the type and size of the expenditures.

The future forecasts of the movement of people and goods are from the mid-case forecast in Chapter 6. These are unconstrained forecasts that represent a “do nothing” scenario.

---

1. Economic multipliers account for direct, indirect, and induced impacts.
2. The 100-mile definition is defined as Sphere 2 in Chapter 4 to include key population and production centers.
3. These impacts are indirectly considered in the demand forecasts for the current and future movement of goods across the border.
Methodology for Estimating the Importance of the Cross-Border Movement of Goods and People

- **Calculated impacts using a standard economic impact analysis model**
  - **IMPLAN.** An input-output model based on the inter-relatedness of local and national industries was used.

- **Characterized movement of people impacts**
  - **Based on personal expenditures.** Impacts were calculated by estimating where people crossing the border spend money (for example, shopping and medicine), how much they spend per trip, and how many trips they take to generate value-added impacts in GDP, jobs, and wages.
  - **Personal and work trips were analyzed separately.**
  - **Data:** Border crossing data and per-trip expenditures.
  - **Sources:** U.S. Customs and Border Protection (CBP), University of Texas Rio Grande Valley Center for Border Economic Studies,\(^5,6\) San Diego Association of Governments,\(^7\) Arizona Office of Tourism,\(^8\) and Texas A&M Transportation Institute (TTI).\(^9\)

- **Characterized movement of goods impacts**
  - **Based on value-added impacts.** Impacts were calculated by applying economic multipliers to the trade data (supply chain values) to generate value-added impacts from trade on GDP, jobs, and wages.
  - **Impacts proportional to export shares.** If one country exports more in a commodity, the relative impact on GDP will be greater for that country.
  - **Data:** Supply chain profile 2019 data.
  - **Sources:** U.S. Bureau Trade Data Online, Freight Analysis Framework, U.S. Bureau of Transportation Statistics TransBorder Freight Data.

- **Estimated impacts using input-output models**
  - **Data:** Multipliers for U.S. and Mexico
  - **Source:** IMPLAN

- **Considered measures and outcomes**
  - **Economic measures:** GDP, employment (in job-years), and labor income.

---

\(^4\) Model formerly known as Impact Analysis for Planning.


\(^9\) Personal interviews with TTI researchers to discuss availability of expenditure and elasticity data.
7.1.2 Methodology for Estimating the Economic Cost of Border Crossing Times on the Movement of Goods and People

Two common ways of measuring the time it takes for a commercial motor vehicle (CMV) or passenger vehicle (POV) to cross the Texas-Mexico border are total crossing times and border wait times.

**Total crossing times** cover the end of a queue in Mexico to departure from the last compound a CMV/POV transits during border crossing. This includes U.S. federal and state border inspection processing. The TTI Border Crossing Information System (BCIS) automatically collects crossing time data at eight CMV and three POV crossings between Mexico and Texas (and Santa Teresa in New Mexico). INRIX provides a sample of global positioning system (GPS) data for other border crossings. Border wait times are a portion of total crossing times that include the average travel time for a CMV/POV from the end of the queue in Mexico to the U.S. border crossing facility. CBP collects border wait time data based on visual tracking for northbound crossings. In addition, CBP provides border wait times for pedestrians and bicycles crossing the border northbound.

The economic analysis uses total crossing times to provide a more complete picture. For CMVs and POVs, BCIS crossing time data is used where available. Additional crossing data was estimated from INRIX. For pedestrians and bicycles, total crossing time is not available, so CBP border wait times were used. Delays for both CMVs and POVs are calculated as the total crossing time minus a minimum time.\(^\text{10}\) Data on southbound crossing times is not available or as robust as the northbound data, so southbound crossing times are assumed to be half of those in the northbound direction.\(^\text{11}\)

For the movement of goods, crossing times represent additional transportation costs. These increased costs will be passed from carriers to producers and raise the cost of production, which will ultimately be passed on to consumers. These costs will have varying effects on industries because some industries are more sensitive to increases in production costs than others.

For the movement of people, POV, pedestrian, and bus delays at the border lead to some canceled or avoided trips, which are a lost economic opportunity for the host country. Key factors for calculating the economic impact of delays for POV, pedestrian, and bus travelers at the border include the number of canceled trips, the average spending per trip (the impact of a trip not taken), and a measure of how sensitive people are to delays based on the purpose of their trips (elasticity). Identifying where border-crossers spend money (for example, shopping) and how many trips they make are also considered.

These calculations do not consider the economic costs other than congestion, such as the impact of air pollution on worker productivity and absenteeism. In addition, opportunity costs to economic development, such as tourism hampered by heavy infrastructure and CMV/POV queues in local communities are not considered.

The future forecasts and the resulting crossing times are from the mid-case forecast in Chapter 6. These are unconstrained forecasts that represent a “do nothing” scenario.

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\(^{10}\) Minimum crossing time is estimated as the 10th percentile crossing time for each border crossing in 2019.

\(^{11}\) This assumption was validated with available southbound data.
Methodology for Estimating Lost Exports and Visitor Expenditures Due to Delays at the Border

- **Calculated impacts using a standard economic impact analysis model**
  - **IMPLAN.** An input-output model based on the inter-relatedness of local and national industries was used.

- **Characterized movement of people impacts**
  - **Based on how people react to changes in delays at border crossings and what they usually spend.** The measures of the sensitivities to change (elasticities) were derived from studies along the U.S.-Mexico border.
  - **Data:** Border crossing data, delay data, supply change profile 2019 data, demand elasticities, and average spending per trip.
  - **Sources:** CBP, BCIS, INRIX, University of Texas Rio Grande Valley Center for Border Economic Studies, San Diego Association of Governments, Arizona Office of Tourism, TTI, plus supply chain profile and crossing data.

- **Characterized movement of goods impacts**
  - **Based on how industries and people react to changes in delays at border crossings.** The measures of the sensitivities to change (“elasticities”) were derived from studies along the U.S.-Mexico border.
  - **Data:** Border crossing data, delay data, supply chain profile 2019 data, and demand elasticities.
  - **Sources:** CBP, BCIS, INRIX, San Diego Association of Governments, TTI, plus supply chain profile and crossing data.

- **Estimated impacts using input-output models**
  - **Data:** Multipliers for U.S. and Mexico
  - **Source:** IMPLAN

- **Considered measures and outcomes**
  - **Economic measures:** GDP, employment (in job-years), and labor income.
  - **Transportation measures and outcomes:** vehicle-hours of delay, value of time, economic productivity losses to operators.

16 Personal interviews with TTI researchers to discuss availability of expenditure and elasticity data.
7.2 Economic Impacts from Movement of Goods across the Border

Mexico was the largest trading partner of both the U.S. and Texas in 2019. In that year, the U.S. traded $621 billion in goods with Mexico; exports accounted for $257 billion; and imports accounted for $364 billion. In 2019, Texas traded $213 billion in goods ($109 billion in exports and $104 billion in imports) with Mexico—more than four times what Texas traded with China, the state’s second-largest trading partner. This translates into over $24 million of trade crossing the Texas-Mexico border each hour.

Texas-Mexico trade is an important part of Texas’ economy. Between 2008 and 2019, Texas ranked first among U.S. states trading goods with Mexico. In 2019, Texas-Mexico trade represented 35 percent of total U.S.-Mexico trade. Between 2008 and 2019, the value of Texas-Mexico trade increased by 63 percent.

During the same time period, the value of U.S.-Mexico trade moved by CMV increased almost 83 percent (from $234 billion in 2008 to $429 billion in 2019), and the value of U.S.-Mexico trade moved by rail increased 74 percent (from $47 billion in 2008 to $82 billion in 2019).

In 2019, approximately 75 percent of U.S.-Mexico CMV and rail trade (in terms of value) was processed at a Texas border crossing. The flow of trade across the Texas-Mexico border varies by supply chain. As a whole, the supply chains represent an array of product types that reflect the integrated nature of trade across the border. The percentage of the total U.S.-Mexico trade that the Texas-Mexico border supports ranges from 59 percent for vegetable products to 89 percent for chemicals.

In 2019, 51 cents of every $1 in U.S.-Mexico trade crossed at a Texas border crossing by CMV and an additional 12 cents crossed by rail, and 69 percent of CMVs and 89 percent of trains entering the U.S. from Mexico crossed in Texas.

The significance of binational trade between the U.S. and Mexico moving through the Texas-Mexico border highlights the importance of a border operating efficiently for processing goods movement. Delays at the border, and unexpected temporary border closures, can significantly increase transportation costs, causing negative economic impacts, including the potential sourcing of goods from other regions, such as Asia.

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18 Source: U.S. Bureau of Transportation Statistics, North America TransBorder Freight Data
The economic impact of goods movement across the Texas-Mexico border reaches the entire U.S. and Mexico.

Manufacturing integration after NAFTA has allowed North American manufacturing to be more competitive with Asia. Cross-border supply chains, some of them rooted in states far from the border, support critical industries in the U.S. and Mexico and form the foundation of multimodal, binational trade. In the U.S., states such as Michigan and Illinois experience some of the greatest impacts from trade through the Texas-Mexico border. In Mexico, the impact of trade also reaches well beyond the border states of Nuevo León, Coahuila, Tamaulipas, and Chihuahua to Ciudad de México, Jalisco, Puebla, Guanajuato, and other states.

19 Motor Vehicles, High Technology, and Machinery are the top three supply chains by value from 1994 through 2019.
This impact can be seen in the contribution of trade to the GDP of each state, the percentage of GDP dependent on trade, and the number of jobs created by trade in each state. The ratification of the U.S.-Mexico-Canada Agreement (USMCA) removes uncertainty and encourages investment in trade-related infrastructure borderwide. For this reason, Texas-Mexico border trade has had a nationally significant impact on GDP in both countries and will continue to do so under the USMCA.
Figure 7.2-3. Percent of GDP Dependent on Trade by CMV and Rail through the Texas-Mexico Border (2019)

Figure 7.2-4. Number of Jobs Dependent on Trade by CMV and Rail through the Texas-Mexico Border (2019)
7.2.1 Current Movement of Goods by CMV Border Crossings in 2019

Efficient flow of goods has been essential to the economic growth and competitiveness of the Texas-Mexico border region, and the state and national economies in both the U.S. and Mexico.

The movement of goods has increased significantly over the last two decades. Northbound CMV crossings increased by 109 percent from 2.2 million in 1996 to 4.6 million in 2019, and northbound railcar movements increased by 305 percent from 251,769 railcars in 1996 to 1,020,921 railcars in 2019.\(^\text{20}\) CMV movements are essential for the production sharing required for just-in-time deliveries in the integrated supply chains that drive most of the cross-border trade. This is especially true for lighter, but high-value components such as in high technology.

The movement of goods across the border, either as exports of final products for sale to consumers and businesses or as intermediate goods being finished into final products, generates substantial economic impact on the local, regional, state, and national economies in terms of GDP, employment and income. Higher-value-added manufacturing in durable goods, including machinery, contribute the most to the U.S. and Mexican economies.

- Much of the trade in the higher-value, durable goods, moves through the Texas-Mexico border to or from the industrial heartland of the American Midwest.

- The economic impact of goods movement across the border by CMV reaches the entire U.S., generating approximately $170 billion annually in U.S. GDP and $115 billion in Mexico GDP.

- Goods movement by CMV across the border contributes $60 billion annually to Texas GDP and $26 billion in GDP to the Mexican border states of Chihuahua, Coahuila, Nuevo León, and Tamaulipas.

- Approximately 57 percent of $285 billion GDP impacts flow through the Laredo/Coahuila/Nuevo León/Tamaulipas Region followed by the El Paso/Santa Teresa/Chihuahua Region and the Rio Grande Valley/Tamaulipas Region.

- Approximately 38 percent of that impact is on the high-technology industry, with motor vehicles also having significant impact. This reflects the integrated supply chains across the Texas-Mexico border that drive much of the trade in manufacturing.

- A significant portion of the total GDP impact in the U.S. and Mexico due to goods movement by CMV across the border, or $122 billion ($73 billion to the U.S., $49 billion to Mexico), comes through one very large crossing: the World Trade Bridge. The Ysleta - Zaragoza crossing has the second largest impact, contributing $34 billion in GDP ($20 billion to the U.S., $14 billion to Mexico).

- Goods passing through the group of large crossings generate $80 billion in GDP ($44.9 billion to the U.S., $35.2 billion to Mexico). Those passing through the medium crossings generate $71.8 billion in GDP ($45.2 billion to the U.S., $26.6 billion to Mexico), and those passing through the small crossings generate $11 billion in GDP ($6.8 billion to the U.S., $4.1 billion to Mexico).
Figure 7.2-5. Impact of Movement of Goods through CMV Border Crossings on GDP (2019)

Figure 7.2-6. Impact of Movement of Goods through CMV Border Crossings on Employment (2019)

Figure 7.2-7. Impact of Movement of Goods thorough CMV Border Crossings on Income (2019)

Figure 7.2-8. Impact of Movement of Goods through CMV Border Crossings on GDP by Supply Chain/Industry (2019)

Current Movement of Goods by Border Crossings and Highway Network

EL PASO/SANTA TERESA/CHIHUAHUA REGION
$81.3 BILLION CONTRIBUTION TO GDP IN 2019
U.S. SIDE: $50.9 BILLION
MEXICO SIDE: $30.4 BILLION
U.S. SIDE SUPPORTS 416 THOUSAND JOBS
MEXICO SIDE SUPPORTS 867 THOUSAND JOBS

LAREDO/COAHUILA/NUEVO LEÓN/TAMAULIPAS REGION
$163.7 BILLION CONTRIBUTION TO GDP IN 2019
U.S. SIDE: $97.0 BILLION
MEXICO SIDE: $66.7 BILLION
U.S. SIDE SUPPORTS 825 THOUSAND JOBS
MEXICO SIDE SUPPORTS 2.3 MILLION JOBS

RIO GRANDE VALLEY/TAMAULIPAS REGION
$40.1 BILLION CONTRIBUTION TO GDP IN 2019
U.S. SIDE: $22.0 BILLION
MEXICO SIDE: $18.1 BILLION
U.S. SIDE SUPPORTS 180 THOUSAND JOBS
MEXICO SIDE SUPPORTS 1.5 MILLION JOBS
Future Movement of Goods by CMV Border Crossings in 2050

The value of goods moved by CMV across the Texas-Mexico border will surpass $1.2 trillion by 2050. The recent ratification of the USMCA helps facilitate trade growth by removing uncertainty and encouraging investment in trade-related infrastructure borderwide. This forecast trade growth is similar in scale to that experienced after NAFTA. Between 2006 and 2019, Texas-Mexico border trade by CMV rose 52 percent to $313 billion.

The impact of the border on U.S. and Mexico GDP is expected to grow by approximately 4 percent per year from $284 billion ($169 billion in the U.S. and $115 billion in Mexico) in 2019 to $1 trillion ($688 billion in the U.S. and $337 billion in Mexico) in 2050.

This reflects a cumulative growth of 307 percent in the U.S. and 193 percent in Mexico between 2019 and 2050. The continued efficient flow of goods would allow North American manufacturing to maintain its competitiveness and retain well-paying manufacturing and design jobs in the U.S. in 2050.
Jobs in the U.S. from border trade are forecast to grow over 4 percent annually between 2019 and 2050.

The economic contribution of goods movement across the border by CMV is forecast to generate $1 trillion in GDP ($688 billion in the U.S. and $337 billion in Mexico) in 2050.

Goods movement across the border by CMV is forecast to grow from contributing $60 billion to the Texas GDP in 2019 to contributing $280 billion in 2050 (366 percent cumulative growth or 11.8 percent annual growth). In the Mexican border states of Chihuahua, Coahuila, Nuevo León, and Tamaulipas, the contribution to GDP is forecast to grow from $26 billion in 2019 to $71 billion in 2050 (173 percent cumulative growth or 5.5 percent annual growth).

The share of binational GDP impacts through the Laredo/Coahuila/Nuevo León/Tamaulipas Region is forecast to decline from approximately 59 percent in 2019 to 48 percent in 2050. This reflects growth in high-technology exports from Mexico. The movements of these high-technology goods are fairly evenly split between the Laredo/Coahuila/Nuevo León/Tamaulipas and El Paso/Santa Teresa/Chihuahua regions.

Nearly 60 percent of GDP impacts will be in high technology, with durable goods as a whole representing 80 percent of GDP in 2050.

Goods movement by CMV across the border through the World Trade Bridge is forecast to contribute $338 billion in GDP in 2050 ($221.2 billion to the U.S., $117.0 billion to Mexico). This reflects an annual growth rate of 3.2 percent (168 percent cumulative growth) from a $122.2 billion impact on GDP in 2019. Goods movement by CMV across the Santa Teresa-San Jerónimo border crossing is forecast to have the second largest impact, behind the World Trade Bridge, contributing $140.6 billion in GDP ($108.2 billion to the U.S., $32.5 billion to Mexico).

The largest growth GDP contribution by border crossing size group is forecast to come from goods movement by CMV across the large crossings, which are forecast to contribute $320 billion in GDP in 2050 ($206.9 billion in the U.S., $113.4 billion in Mexico) up from $80.1 billion in 2019, a forecast annual growth rate of 4.5 percent (290 percent cumulative growth). CMV goods movement across the border through the medium crossings are forecast to contribute $312.5 billion in GDP in 2050 ($223.9 billion to the U.S., $88.6 billion to Mexico), up from $70.7 billion in 2019 growing at an annual rate of 4.9 percent (342 percent cumulative growth). Goods movement by CMV through the small crossings is forecast to contribute $54.1 billion in GDP in 2050 ($35.9 billion in the U.S., $18.2 billion in Mexico) up from $8.1 billion in 2019, growing at an annual rate of 6.3 percent (cumulative growth of 568 percent).
Future Movement of Goods by Border Crossings and Highway Network

**El Paso/Santa Teresa/Chihuahua Region**
- **$332.9 Billion** contribution to GDP in 2050
- **U.S. Side:** $226.9 Billion
- **Mexico Side:** $106.0 Billion
- **U.S. Side Supports:** 1.8 Million Jobs
- **Mexico Side Supports:** 3.1 Million Jobs

**Laredo/Coahuila/Nuevo Leon/Tamaulipas Region**
- **$493.1 Billion** contribution to GDP in 2050
- **U.S. Side:** $283.3 Billion
- **Mexico Side:** $164.8 Billion
- **U.S. Side Supports:** 2.8 Million Jobs
- **Mexico Side Supports:** 6.0 Million Jobs

**Rio Grande Valley/Tamaulipas Region**
- **$198.9 Billion** contribution to GDP in 2050
- **U.S. Side:** $132.7 Billion
- **Mexico Side:** $66.2 Billion
- **U.S. Side Supports:** 1.1 Million Jobs
- **Mexico Side Supports:** 5.3 Million Jobs
7.2.3 Current Movement of Goods by Rail in 2019

Between 2006 and 2019, the value of goods moved across the Texas-Mexico border by rail rose by 59 percent from $47.0 billion to $74.8 billion. These goods contributed over $58.1 billion in GDP ($30.0 billion in the U.S. and $28.1 billion in Mexico).

Rail carries a substantial portion of goods in higher-valued supply chains, such as metals, machinery, and especially motor vehicles. In the case of motor vehicles, the high percentage of products going to the American Midwest and the relative cost advantages of using rail for long-distance hauling contribute to the higher share of goods moving by rail, particularly in the northbound direction.
Much of the goods moving by rail has origins or destinations in the industrial heartland of the American Midwest. The long distances make rail relatively more attractive compared to origins and destinations closer to the border. The share of overall economic impacts (GDP, employment, and income) in areas not near the border (national impacts) are higher for rail since goods move longer distances by rail than by CMV.

Rail movements generate over $58 billion in GDP ($30.0 billion in the U.S. and $28.1 billion in Mexico) in 2019.

Goods movement by rail across the border annually contributes $7.6 billion to Texas GDP and $7.3 billion to the Mexican border states of Chihuahua, Coahuila, Nuevo León, and Tamaulipas in 2019.

Over 88 percent of binational GDP impacts (in both directions) flow through the Laredo/Coahuila/Nuevo León/Tamaulipas Region in 2019.

72 percent of the impact of northbound trade on GDP is from the movement of motor vehicles by rail in 2019. Motor vehicles and machinery together make up 16 percent of the impact of southbound rail movement.

Most of the trade by rail will pass through three rail crossings in 2019. Laredo Texas Mexican Railway International Bridge contributes $35.8 billion in GDP ($20.9 billion in the U.S., and $14.9 billion in Mexico). Eagle Pass Bridge contributes $15.2 billion in GDP ($5.3 billion in the U.S. and $10.0 billion in Mexico). The El Paso Rail Bridges contribute $6.2 billion in GDP ($3.2 billion in U.S. and $3.0 billion in Mexico).
Figure 7.2-15. Impact of Movement of Goods by Rail on GDP (2019)

Figure 7.2-16. Impact of Movement of Goods by Rail on Employment (2019)

Figure 7.2-17. Impact of Movement of Goods by Rail on Income (2019)

Figure 7.2-18. Impact of Movement of Goods by Rail on GDP by Supply Chain/Industry (2019)

Current Movement of Goods by Rail Network

**EL PASO/SANTA TERESA/CHIHUAHUA REGION**

$6.2 BILLION CONTRIBUTION TO GDP IN 2019

U.S. SIDE: $3.2 BILLION
MEXICO SIDE: $3.0 BILLION

U.S. SIDE SUPPORTS 32 THOUSAND JOBS
MEXICO SIDE SUPPORTS 57 THOUSAND JOBS

**LAREDO/COAHUILA/NUEVO LEÓN/TAMAULIPAS REGION**

$51.0 BILLION CONTRIBUTION TO GDP IN 2019

U.S. SIDE: $28.1 BILLION
MEXICO SIDE: $24.9 BILLION

U.S. SIDE SUPPORTS 224 THOUSAND JOBS
MEXICO SIDE SUPPORTS 583 THOUSAND JOBS

**RIO GRANDE VALLEY/TAMAULIPAS REGION**

$0.9 BILLION CONTRIBUTION TO GDP IN 2019

U.S. SIDE: $0.6 BILLION
MEXICO SIDE: $0.3 BILLION

U.S. SIDE SUPPORTS 4.5 THOUSAND JOBS
MEXICO SIDE SUPPORTS 57 THOUSAND JOBS
7.2.4 Future Cross-Border Movement of Goods by Rail in 2050

Of the almost $210 billion in trade moved by rail in 2050, a substantial portion of traffic is forecast to be in higher-valued supply chains, especially motor vehicles. Annual growth in U.S. GDP and employment impacts from the border is forecast to average over 2.8 percent from 2019 to 2050.

The economic impact of goods moving by rail across the Texas-Mexico border is forecast to grow from more than $58 billion ($30.0 billion in the U.S. and $28.1 billion in Mexico) in 2019 to $140 billion ($76.4 billion in the U.S. and $63.6 billion in Mexico) in 2050.

This reflects a forecast cumulative growth of 154 percent in the U.S. and 125 percent in Mexico, or approximately 2.8 percent annual growth in both countries.

Although the movement of goods by rail is forecast to grow more slowly than by CMV, rail will continue to play a pivotal role in keeping U.S. and Mexican manufacturing competitive.
Figure 7.2-20. Impact of Movement of Goods by Rail on GDP (2050)

![Bar chart showing the impact of rail movement of goods on GDP.](chart1)

Figure 7.2-21. Impact of Movement of Goods by Rail on Employment (2050)

![Bar chart showing the impact of rail movement of goods on employment.](chart2)

Figure 7.2-22. Impact of Movement of Goods by Rail on Income (2050)

![Bar chart showing the impact of rail movement of goods on income.](chart3)

Figure 7.2-23. Impact of Movement of Goods by Rail on GDP by Supply Chain/Industry (2050)

![Bar chart showing the impact of rail movement of goods by supply chain/industry.](chart4)

Future Movement of Goods by Rail Network

**EL PASO/SANTA TERESA/CHIHUAHUA REGION**

- **$19.3 BILLION** contribution to GDP in 2050
- **U.S. Side:** $5.4 BILLION
  - **Mexico Side:** $13.9 BILLION
- **U.S. Side Supports:** 53 THOUSAND JOBS
- **Mexico Side Supports:** 268 THOUSAND JOBS

**LAREDO/COAHUILA/NUEVO LEON/TAMAULIPAS REGION**

- **$111.4 BILLION** contribution to GDP in 2050
- **U.S. Side:** $64.6 BILLION
  - **Mexico Side:** $46.8 BILLION
- **U.S. Side Supports:** 565 THOUSAND JOBS
- **Mexico Side Supports:** 1.6 MILLION JOBS

**RIO GRANDE VALLEY/TAMAULIPAS REGION**

- **$9.3 BILLION** contribution to GDP in 2050
- **U.S. Side:** $6.4 BILLION
  - **Mexico Side:** $2.9 BILLION
- **U.S. Side Supports:** 47 THOUSAND JOBS
- **Mexico Side Supports:** 267 THOUSAND JOBS
Figure 7.2-24. Impact of Movement of Goods on GDP by Rail Crossing (2050)

Note: Presidio-Ojinaga International Rail Bridge is currently closed.

### 7.3 Economic Impacts from Movement of People across the Border

Bicycle, pedestrian, and POV trips strongly influence the border economy. Visitors cross primarily in POVs (79 percent) or as pedestrians/bicyclists (20 percent), while a smaller percentage arrive by buses (less than 1 percent). Over the year, travel volumes peak around holiday periods (such as Holy Week or Semana Santa).

Table 7.3-1. Per-trip Expenditures (2019 dollars)

<table>
<thead>
<tr>
<th>Category</th>
<th>Crossers Living in Texas</th>
<th>Crossers Living in Mexico</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pedestrian, bicyclist, and bus passenger</td>
<td>$155</td>
<td>$122</td>
</tr>
<tr>
<td>POV</td>
<td>$446</td>
<td>$397</td>
</tr>
</tbody>
</table>

Trips around the holidays (Christmas and New Year’s or fiestas Navideñas) and Holy Week tend to be longer, luxury-type excursions when high-income Mexican travelers spend more money than at other times of the year. Shopping trips,\(^{21}\) medical services, and family visits are other reasons that people cross the border.

Given that many people crossing the border in POVs are overnight travelers, the typical person traveling by POV spends considerably more than a pedestrian,

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\(^{21}\) The role of cross-border shopping can be crucial in communities near the border. Studies on the U.S. side estimate that Mexican shoppers account for 40 percent to 45 percent of retail purchases in Laredo, 35 percent to 40 percent in McAllen, 30 percent to 35 percent in Brownsville, and 10 percent to 15 percent in El Paso (Coronado R.A. and K. R. Phillips, Spotlight: Dollar-Sensitive Mexican Shoppers Boost Texas Border Retail Activity. Federal Reserve Bank of Dallas, Southwest Economy, Q4 2012).
bicyclist, or bus rider crossing the border. The dollar figures in Table 7.3-1 represent the average lost expenditures per trip when a trip is not taken because of border delays.

### 7.3.1 Current Movement of People in 2019

Historically, Mexican nationals visit and shop in Texas. This activity generates revenues for local businesses and increases economic opportunities (jobs and wages). Likewise, vacation travel and social and family visits by U.S. nationals generate economic activity in Mexico.

Between 1996 and 2019, northbound movements of people across the Texas-Mexico border decreased by 38 percent. However, after people movements bottomed out in 2011 due to the Great Recession, an additional 15 million people have crossed the border annually to bring the total in 2019 to more than 90 million.

Employment in retail, recreation and entertainment, hotels and restaurants, and other industries benefit from the cross-border movement of people. This helps explain why job growth in some areas along the border has been among the fastest in the nation where the retail industry provides employment for workers with low and moderate skills.22

- **Personal cross-border trips (by POV, pedestrian, bicycle, or bus)** strongly influence the border economy, resulting in a combined impact on GDP of $9.3 billion in 2019. Nearly 86 percent comes from visitors crossing in POVs.

- **The movement of people generates over $9.3 billion annually in GDP ($6.5 billion in the U.S. and $2.8 billion in Mexico) in 2019.** More than 99 percent of these benefits stay in the Texas-Mexico border region and contribute to the economies of Texas, Chihuahua, Coahuila, Nuevo León, and Tamaulipas.

- **The GDP impacts are greatest in the El Paso/Santa Teresa/Chihuahua Region ($3.5 billion) and the Rio Grande Valley/Tamaulipas Region ($3.1 billion) in 2019.** The Laredo/Coahuila/Nuevo León/Tamaulipas Region receives an annual GDP contribution of $2.7 billion.

- **The movement of people generates nearly 230,000 jobs (138,000 in the U.S. and 91,000 in Mexico) in 2019.**

- **In 2019, the movement of people through large crossings contributes $3.5 billion in GDP ($2.4 billion to the U.S., $1.0 billion to Mexico),** and the movement of people through medium crossings contributes $4.6 billion in GDP ($3.2 billion to the U.S., $1.4 billion to Mexico). The movement of people through small crossings contributes $1.2 billion in GDP ($0.8 billion to the U.S., $0.4 billion to Mexico).

- **The movement of people through the Paso Del Norte crossing has the largest impact, contributing $1.0 billion in GDP ($0.7 billion to the U.S., $0.3 billion to Mexico) in 2019.**

Because more than 99 percent of these benefits stay in the Texas-Mexico border region and contribute to the economies of Texas, Chihuahua, Coahuila, Nuevo León, and Tamaulipas, the

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economic impact of the movement of people is presented for the Texas and Mexican border regions only.

**Figure 7.3-1. Impact of Movement of People on GDP (2019)**

**Figure 7.3-2. Impact of Movement of People on Employment (2019)**

**Figure 7.3-3. Impact of Movement of People on Income (2019)**

### Current Movement of People by Border Crossings

**EL PASO/SANTA TERESA/CHIHUAHUA REGION**
- **$3.5 BILLION** contribution to GDP in 2019
- U.S. Side: **$2.5 BILLION**
- Mexico Side: **$1.0 BILLION**
- U.S. Side Supports 52 Thousand Jobs
- Mexico Side Supports 35 Thousand Jobs

**LAREDO/COAHUILA/NUEVO LEON/TAMAULIPAS REGION**
- **$2.7 BILLION** contribution to GDP in 2019
- U.S. Side: **$1.9 BILLION**
- Mexico Side: **$0.8 BILLION**
- U.S. Side Supports 39 Thousand Jobs
- Mexico Side Supports 26 Thousand Jobs

**RIO GRANDE VALLEY/TAMAULIPAS REGION**
- **$3.1 BILLION** contribution to GDP in 2019
- U.S. Side: **$2.2 BILLION**
- Mexico Side: **$0.9 BILLION**
- U.S. Side Supports 46 Thousand Jobs
- Mexico Side Supports 31 Thousand Jobs

Economic Importance of the Texas-Mexico Border
7.3.2 Future Movement of People in 2050

By 2050, approximately 112.4 million people are forecast to cross the Texas-Mexico border, an increase of 30 percent from the 86.3 million people that crossed in 2019. POV (78 percent of all trips), pedestrian/bicycle (20.5 percent), and bus (1.5 percent) trips are forecast to continue to strongly influence the border economy. However, the relative impact on GDP is forecast to be small compared to that of the movement of goods in the future.

Between 2019 and 2050, GDP and employment impacts from POV, pedestrian/bicycle, and bus trips across the border are forecast to increase at annual rates of about 0.9 percent on both sides of the border (33 percent cumulative growth in Texas and 32 cumulative growth in the Mexican border states). Although these impacts are positive, they are forecast to be smaller than those resulting from the movement of goods, which are forecast to grow at a faster rate.
The movement of people is forecast to generate nearly $12.3 billion in GDP ($8.6 billion in Texas and $3.7 billion in the Mexican border states) in 2050 compared to over $9.3 billion in GDP ($6.5 billion in Texas and $2.8 billion in the Mexican border states) in 2019. This reflects a forecast of 33 percent cumulative growth (0.9 percent annual growth) in Texas and 32 percent cumulative growth (0.9 percent annual growth) in the Mexican border states.

The binational GDP impacts are forecast to continue to be greatest in the El Paso/Santa Teresa/Chihuahua ($4.4 billion) Region and the Rio Grande Valley/Tamaulipas Region ($4.5 billion) in 2050. This reflects both regions having more people cross the border than in the Laredo/Coahuila/Nuevo León/Tamaulipas Region, which is forecast to have a $3.3 billion annual GDP impact.

The movement of people is forecast to generate nearly 303,000 jobs (183,000 in the U.S. and 120,000 in Mexico) in 2050.

The movement of people through medium crossings is forecast to contribute $6.2 billion in GDP ($4.3 billion to the U.S., $1.9 billion to Mexico) compared to $4.6 billion in GDP in 2019, a cumulative increase of 33 percent (0.9 percent annual growth). The movement of people through large crossings is forecast to have a smaller effect, contributing $4.6 billion in GDP ($3.2 billion to the U.S., $1.4 billion to Mexico) in 2050, a 33 percent cumulative increase (0.9% annual) compared to $3.5 billion in GDP in 2019. Through small crossings, the movement of people is forecast to contribute $1.5 billion in GDP ($1.0 billion to the U.S., $0.4 billion to Mexico) in 2050, an increase of 29 percent cumulatively (0.8% annually), compared to $1.2 billion in GDP in 2019.

In 2050, the movement of people through the Paso del Norte crossing is forecast to still have the largest effect, contributing $1.3 billion in GDP ($0.9 billion to the U.S., $0.4 billion to Mexico) compared to $1.0 billion in GDP a 26 percent cumulative increase (0.8 percent annual increase).
Figure 7.3-5. Impact of Movement of People on GDP (2050)

Figure 7.3-6. Impact of Movement of People on Employment (2050)

Figure 7.3-7. Impact of Movement of People on Income (2050)

Future Movement of People by Border Crossings

EL PASO/SANTA TERESA/CHIHUAHUA REGION
$4.4 BILLION CONTRIBUTION TO GDP IN 2050
U.S. SIDE: $3.1 BILLION
MEXICO SIDE: $1.3 BILLION
U.S. SIDE SUPPORTS 66 THOUSAND JOBS
MEXICO SIDE SUPPORTS 44 THOUSAND JOBS

LAREDO/COAHUILA/NUEVO LEÓN/TAMAULIPAS REGION
$3.3 BILLION CONTRIBUTION TO GDP IN 2050
U.S. SIDE: $2.3 BILLION
MEXICO SIDE: $1.0 BILLION
U.S. SIDE SUPPORTS 50 THOUSAND JOBS
MEXICO SIDE SUPPORTS 33 THOUSAND JOBS

RIO GRANDE VALLEY/TAMAULIPAS REGION
$4.5 BILLION CONTRIBUTION TO GDP IN 2050
U.S. SIDE: $3.1 BILLION
MEXICO SIDE: $1.4 BILLION
U.S. SIDE SUPPORTS 67 THOUSAND JOBS
MEXICO SIDE SUPPORTS 44 THOUSAND JOBS
7.4 **Economic Costs of Border Crossing Times on Movement of Goods**

Delays in the movement of goods at the border increase the costs of transporting them to their destinations. This translates into a loss of productivity and competitiveness and leads to reduced demand for these goods. The result is reduced production levels and lost exports, which impact many parts of the economy, such as company revenues, jobs, and labor income. Delays represent missed opportunities to the U.S. and Mexican economies.

The BTMP uses total crossing times to measure border delays from a combination of BCIS and INRIX data. Historical crossing time data is not available for every crossing, but historical border wait times, as measured by CBP, provide an indication of the recent growth in delays at the border.

Between 2003 and 2019, there was a significant increase on CMV wait times at the Texas-Mexico border. Ninetieth (90th) percentile wait times more than doubled borderwide—84 percent increase (over 16 minutes) in the El Paso/Santa Teresa/Chihuahua Region, 58 percent increase (over 14 minutes) in the Laredo/Coahuila/New León/Tamaulipas Region, and over 186 percent (over 29 minutes) increase in the Rio Grande Valley/Tamaulipas Region.
In the El Paso/Santa Teresa/Chihuahua Region, Gateway to the Americas saw 90th percentile wait times triple from 20 minutes in 2003 to 60 minutes in 2019. In the Laredo/Coahuila/Nuevo León/Tamaulipas Region, 90th percentile wait times doubled at Del Rio–Ciudad Acuña International and Laredo-Colombia Solidarity Bridge over the same time period. Several bridges in the Rio Grande Valley/Tamaulipas Region experienced large increases in 90th percentile wait times from 2003 to 2019, including Pharr-Reynosa International (five times increase), Progreso (four times increase), and Free Trade Bridge (four times increase).

Total crossing times are much higher than the border wait times measured by CBP.

While southbound CMV crossing times almost all fell below 30 minutes in 2019, northbound CMV crossing times are typically between 1 and 2 hours. These border crossing delays add to the cost of cross-border trade.

### 7.4.1 Current Border Delays to the Movement of Goods in 2019

In 2019, the delay for goods heading northbound totaled 1.6 million vehicle-hours per year, nearly 4,406 hours daily, or 21 minutes per CMV. If Mexican exports into the U.S. did not encounter crossing time delays at the border, both countries would trade more. Each minute of reduction in delay for a single CMV is worth approximately $12.00 in Mexican GDP and $22.35 in U.S. GDP. Reductions in delays would result in more goods and services being produced and higher GDP, leading to more jobs and higher wages in both countries.

Out of the more than $312 billion in trade moved through the Texas-Mexico border by CMV, the delays to the movement of goods represented a lost economic opportunity of approximately $2.2 billion in GDP to the U.S. and Mexico.
In 2019, delays for goods heading northbound totaled 1.6 million vehicle-hours per year, more than 4,406 hours daily, or 21 minutes per CMV.\(^{23}\) This is the equivalent of approximately $68.3 million in economic productivity losses to operators or nearly $210 borderwide each minute.\(^{24}\) The monthly GDP loss due to delay totaled approximately $186 million, more than $42 million weekly, approximately $6 million daily, approximately $340,000 hourly, which leads to a GDP loss of a little more than $5,000 per minute.

**Delays when transporting goods across the border have a large impact on both the U.S. and Mexican economies.** Current border delays end up reducing U.S. GDP by $1 billion and Mexico’s GDP by $1.2 billion each year.

**The high-technology industry is most heavily affected.** Approximately half (54.9 percent) of the lost GDP due to delays was in the high technology sector.

**These lost opportunities reduce jobs in both countries.** The lost economic activity would have generated nearly 143,700 jobs annually, which would have paid more than $1.4 billion in labor income, with a split between the U.S. ($0.6 billion) and Mexico ($0.8 billion).

**Delays to goods movement at the World Trade Bridge, the one very large crossing, results in an estimated $422.3 million impact on GDP ($197.9 million to the U.S., $224.4 million to Mexico).** Delays to goods movement through the Pharr-Reynosa International Bridge on the Rise have an even larger impact, reducing GDP by an estimated $594.1 million ($209.4 million to the U.S., $384.7 million to Mexico).

**Delays to goods movement through the large crossings result in an estimated $1.25 billion impact on GDP ($567.0 million to the U.S., $680.1 million to Mexico).** Delays through the medium crossings result in an estimated $544.5 million impact on GDP ($302.9 million to the U.S., $241.7 million to Mexico). Delays through the small crossings result in an estimated $21.3 million impact on GDP ($10.7 million to the U.S., $10.6 million to Mexico).

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\(^{23}\) Delay is estimated as the difference between the total crossing time and the minimum crossing time (10th percentile crossing time in 2019).

\(^{24}\) Productivity losses are estimated at $42.46 per hour, which takes into account driver wages, benefits, fuel costs, CMV lease or purchase payments, repair and maintenance, CMV insurance premiums, permits, and licenses. The value reflects a weighted average of U.S. and Mexican values based on income and population. Estimate does not include other productivity losses such as spoilage and goods safety stock. Based on American Transportation Research Institute, An Analysis of the Operational Costs of Trucking: 2019 Update.
Figure 7.4-1. Impact of Delays to Movement of Goods on GDP (2019)

Figure 7.4-2. Impact of Delays to Movement of Goods on Employment (2019)

Figure 7.4-3. Impact of Delays to Movement of Goods on Income (2019)

Figure 7.4-4. Impact of Delays to Movement of Goods on GDP by Supply Chain/Industry (2019)

Note that the impacts of delays on GDP, employment, and income are negative.

Current Delays of Moving Goods across the Texas-Mexico Border

- **El Paso/Santa Teresa/Chihuahua Region**
  - **$1.1 Billion** Impact on GDP in 2019
  - U.S. Side: **$0.6 Billion**
  - Mexico Side: **$0.5 Billion**
  - U.S. Side Represents **4 Thousand Jobs**
  - Mexico Side Represents **26 Thousand Jobs**

- **Laredo/Coahuila/Nuevo León/Tamaulipas Region**
  - **$0.6 Billion** Impact on GDP in 2019
  - U.S. Side: **$0.3 Billion**
  - Mexico Side: **$0.3 Billion**
  - U.S. Side Represents **4 Thousand Jobs**
  - Mexico Side Represents **42 Thousand Jobs**

- **Rio Grande Valley/Tamaulipas Region**
  - **$0.6 Billion** Impact on GDP in 2019
  - U.S. Side: **$0.2 Billion**
  - Mexico Side: **$0.4 Billion**
  - U.S. Side Represents **2 Thousand Jobs**
  - Mexico Side Represents **64 Thousand Jobs**
Figure 7.4-5. Impact of Delays to Movement of Goods on GDP by Border Crossing (2019)

7.4.2 Future Delays to the Movement of Goods in 2050

The value of goods moved by CMV across the Texas-Mexico border is forecast to surpass $1.2 trillion (in 2019 dollars) by 2050 if prevailing trends continue. Delays are forecast to continue to grow, and the lost opportunities are forecast to be significantly higher, creating a $74.9 billion impact on GDP in the U.S. and a $40.7 billion impact on GDP in Mexico.

Economic forecasts of the movement of goods suggest greater economic activity in the future. Without future improvements at the Texas-Mexico border, this will result in increased delays and larger lost economic opportunities.
The amount of delay for goods heading northbound is forecast to increase to over 104 million hours per year, 285,000 hours daily, or 505 minutes per CMV by 2050. This is the equivalent of approximately $4.4 billion in economic productivity losses to operators or nearly $13,500 borderwide each minute. The monthly GDP loss due to delay totaled more than $9 billion, more than $2.2 billion weekly, approximately $316 million daily, approximately $18 million hourly, which is a GDP loss of a little more than $293,000 per minute.

The already significant impact on GDP is forecast to skyrocket. The value of goods and services not produced due to border delays are forecast to increase from approximately $2.2 billion per year for both the U.S. and Mexico in 2019 to $74 billion in the U.S. and $41 billion in Mexico in 2050.

The relative impact on the high-technology industry is forecast to worsen. The impact on high-technology sections is forecast to grow to approximately two-thirds of the total impact on supply chain sectors.

Impacts are forecast to continue to be felt both in the Texas-Mexico border region and national economies.

The impact on labor income is forecast to increase significantly, from less than $1.5 billion in both the U.S. and Mexico, to $44.3 billion annually in the U.S. and $28.7 billion annually in Mexico by 2050.

The cost of delays at medium-sized border crossings will grow to the point that they will exceed the costs of delays at very large crossings. The future cost of delays at medium-sized crossings ($43.6 billion impact on U.S. and Mexican GDP) is expected to exceed the economic cost from very large ($28.0 billion impact on U.S. and Mexican GDP) and large crossings ($42.0 billion impact on U.S. and Mexican GDP).

Delays to goods movements through the medium crossings are forecast to result in an estimated impact of $43.6 billion on GDP ($30.2 billion to the U.S., $13.4 billion to Mexico) in 2050, up by a cumulative increase of 7,913 percent (15.2 percent annually) from $554.5 million on GDP in 2019. Delays to goods movement through the large crossings results in an estimated impact of $42.0 billion on GDP ($26.8 billion to the U.S., $15.2 billion to Mexico) in 2050, a cumulative increase of 3,275 percent (12.0 percent annually) from the $1.25 billion GDP impact in 2019. Through the small crossings, delays of goods movement are forecast to result in an estimated $1.9 billion impact on GDP ($1.1 billion to the U.S., $0.8 billion to Mexico) in 2050 compared to $21.6 million on GDP in 2019, a cumulative increase of 8,613 percent (15.5 percent annually).

Demand and delays at the World Trade Bridge are forecast to experience the estimated impact on GDP to move from $422.3 million in 2019 to $28.0 billion ($16.8 billion on the U.S., $11.2 billion on Mexico) in 2050. This is 6,522 percent growth (14.5 percent annually). The impact of delays on World Trade Bridge are forecast to exceed the impacts from the delays on Pharr-Reynosa International crossing, which will experience an estimated $25.7 billion impact on GDP ($16.6 billion to the U.S., $9.1 billion to Mexico) in 2050 compared to $594.1 million on GDP in 2019, a cumulative increase of 4,225 percent (12.9 percent annually).

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25 Delay estimated as the difference between the total crossing time and the minimum crossing time (10th percentile crossing time in 2019).

26 Productivity losses estimated at $42.46 per hour, which takes into account driver wages, benefits, fuel costs, CMV lease or purchase payments, repair and maintenance, CMV insurance premiums, permits, and licenses. The value reflects a weighted average of U.S. and Mexican values based on income and population. Estimate does not include other productivity losses such as spoilage and goods safety stock. Based on American Transportation Research Institute, An Analysis of the Operational Costs of Trucking: 2019 Update.
Economic Importance of the Texas-Mexico Border

Future Delays of Moving Goods across the Texas-Mexico Border

**EL PASO/SANTA TERESA/CHIHUAHUA REGION**

$41.9 BILLION IMPACT ON GDP IN 2050

U.S. SIDE: $28.3 BILLION
MEXICO SIDE: $13.6 BILLION

U.S. SIDE REPRESENTS 232 THOUSAND JOBS
MEXICO SIDE REPRESENTS 892 THOUSAND JOBS

**LAREDO/COAHUILA/NUEVO LEÓN/TAMAULIPAS REGION**

$42.9 BILLION IMPACT ON GDP IN 2050

U.S. SIDE: $29.9 BILLION
MEXICO SIDE: $16.0 BILLION

U.S. SIDE REPRESENTS 239 THOUSAND JOBS
MEXICO SIDE REPRESENTS 982 THOUSAND JOBS

**RIO GRANDE VALLEY/TAMAULIPAS REGION**

$30.8 BILLION IMPACT ON GDP IN 2050

U.S. SIDE: $19.7 BILLION
MEXICO SIDE: $11.1 BILLION

U.S. SIDE REPRESENTS 178 THOUSAND JOBS
MEXICO SIDE REPRESENTS 2 MILLION JOBS

Note that the impacts of delays on GDP, employment, and income are negative.
7.5 Economic Costs of Border Crossing Times on Movement of People

Bus, pedestrian, bicyclist, and POV trips strongly influence the border economy because incoming visitors pay for goods and services. Those purchases ripple through the local economy through a multiplicative effect. Delays at border crossings discourage some of these travelers from crossing into the neighboring country, and many will choose to spend money in their home country instead.

7.5.1 Current Delays to People in 2019

In 2019, 86.3 million people crossed the Texas-Mexico border; 64.5 million crossed in POVs, and 21.8 million were pedestrians, bicyclists, or bus riders.

Current border delays cause people to postpone, cancel, or not consider some trips. The money that they would have spent at local businesses such as hotels, restaurants, shops, and recreation and entertainment facilities, many of which employ workers with low and moderate skills, does not come to the host country. That money would have had a larger impact than just its face value, as its impacts would ripple through the local economy. In addition, pedestrian, bicyclist, and bus delays can cause discomfort, such as waiting unsheltered at pedestrian crossings.
The delays POVs, pedestrians, bicyclists, and bus riders experience at the border represent a lost economic opportunity of approximately $353.6 million per year in GDP to Texas and approximately $148.6 million per year in lost GDP to Mexico.

- **Delay for people traveling into the U.S.** is particularly high, totaling 15.7 million person-hours, nearly 43,000 hours daily, or 19 minutes per trip in 2019. This is the equivalent of approximately $136.4 million in the value of lost time annually or about $310 borderwide each minute. The monthly GDP loss due to these delays totaled to approximately $41.9 million, more than $9.6 million weekly, approximately $1.4 million daily, nearly $58,000 hourly, which leads to a GDP loss of more than $958 per minute.

- The lost expenditures associated with these delays represent a lost economic opportunity of approximately $502.2 million annually in the borderwide GDP ($353.6 million in Texas and $148.6 million in Chihuahua, Coahuila, Nuevo León, and Tamaulipas) in 2019.

- In 2019, personal vehicle, pedestrian/bicycle, and bus delays caused lost economic opportunities for local economies, especially retail businesses. Grocery stores, gas stations, and shops (for example, clothing and souvenirs) were the most significantly impacted, experiencing more than half of the GDP impact in both Texas and Mexico.

- Visitor spending that did not occur because of border delays could have supported more than 7,400 jobs annually in Texas and nearly 5,000 in Mexico. More than half of those jobs would have been in the retail sector.

- These lost jobs would have paid workers $220 million in Texas and $47 million in Mexico.

- Delays for people traveling through the large crossings represent a lost economic opportunity of $210.8 million in GDP ($147.3 million to the U.S., $63.5 million to Mexico) in 2019. Similarly, delays for people traveling through medium crossings represent a lost economic opportunity of $240.2 million in GDP ($169.8 million to the U.S., $70.4 million to Mexico). Delays for people traveling through the small crossings are lower, representing a lost economic opportunity of $51.2 million in GDP ($36.4 million to the U.S., $14.6 million to Mexico).

- The border crossing with the largest economic impact due to delays for people traveling is the Yselta- Zaragoza crossing with an estimated loss of $60.8 million in GDP ($43.6 million to the U.S., $17.2 million to Mexico) in 2019.

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27 Wait time for bus riders does not include their wait on the bus before going through border security.

28 Delay for POVs is estimated as the difference between the total crossing time and the minimum crossing time (10th percentile crossing time in 2019). Delay for pedestrians and bicycles estimated as the wait time.

29 Estimated using a value of time of $8.69 per hour (reflects weighted average of U.S. and Mexican values of time based on income and population) and an average vehicle occupancy of 1.67 people per vehicle.
Figure 7.5-1. Impact of Delays to Movement of People on GDP (2019)

Figure 7.5-2. Impact of Delays to Movement of People on Employment (2019)

Figure 7.5-3. Impact of Delays to Movement of People on Income (2019)

Note that the impacts of delays on GDP, employment, and income are negative.

Current Delays for the Movement of People

EL PASO/SANTA TERESA/CHIHUAHA REGION
$215.8 MILLION IMPACT ON GDP IN 2019
U.S. SIDE: $152.9 MILLION
MEXICO SIDE: $62.9 MILLION
U.S. SIDE REPRESENTS 3 THOUSAND JOBS
MEXICO SIDE REPRESENTS 2 THOUSAND JOBS

LAREDO/COAHUILA/NUEVO LEÓN/TAMAUPLAS REGION
$122.2 MILLION IMPACT ON GDP IN 2019
U.S. SIDE: $82.8 MILLION
MEXICO SIDE: $39.4 MILLION
U.S. SIDE REPRESENTS 2 THOUSAND JOBS
MEXICO SIDE REPRESENTS 1 THOUSAND JOBS

RIO GRANDE VALLEY/TAMAUPLAS REGION
$164.2 MILLION IMPACT ON GDP IN 2019
U.S. SIDE: $117.9 MILLION
MEXICO SIDE: $46.3 MILLION
U.S. SIDE REPRESENTS 2 THOUSAND JOBS
MEXICO SIDE REPRESENTS 2 THOUSAND JOBS
7.5.2 Future Delays to People in 2050

The number of people crossing the border is forecast to grow from 86.3 million in 2019 to 112.4 million in 2050. With an additional 26.1 million people crossing the border in 2050 and increased pressure on border infrastructure, the lost opportunities to local economies due to POV, pedestrian, bicycle, and bus delays will increase.

Without future improvements at the Texas-Mexico border, forecasts of the future movement of people indicate increased impact on GDP, employment, and labor income for border communities from future delays.
The delay for people crossing into the U.S. is forecast to increase to more than 202 million person-hours per year, 555,000 hours daily, or 187 minutes per trip by 2050.\(^{30}\) This is the equivalent of more than $1.8 billion in the value of lost time annually or over $4,000 borderwide each minute.\(^{31}\) The monthly GDP loss due to delay totaled approximately $312 million, more than $72 million daily, approximately $10 million daily, nearly $570,000 hourly, which leads to a GDP loss of more than $9,000 per minute.

The impact on GDP of delays to people crossing the border is forecast to increase from 2019 to 2050. The impact on GDP of border delays is forecast to increase from approximately $353.6 million in 2019 to $2.7 billion per year in 2050 (657 percent cumulative growth) in Texas and from $148.6 million in 2019 to $1.1 billion per year in 2050 (620 percent cumulative growth) in Chihuahua, Coahuila, Nuevo León, and Tamaulipas.

In 2050, the retail sector is forecast to experience more than half of the GDP, job, and labor income impacts of delays at the Texas-Mexico border.

The impact on labor income is forecast to increase, from $219.6 million in 2019 to $1.6 billion in 2050 in Texas, and from $47.0 million in 2019 to $337.5 million in 2050 in Mexico.

Delays for people traveling through the large crossings in 2050 are forecast to represent a lost economic opportunity of $1.3 billion in GDP ($895.5 million to the U.S., $408.6 million to Mexico) in 2050 compared to $210.8 million in 2019, a 518 percent cumulative increase (6.1 percent annual increase). Delays at medium crossings are forecast to have a similar impact of $1.9 billion in GDP ($1.4 billion to the U.S., $0.5 billion to Mexico) in 2050, up from $240.2 million in 2019, a cumulative increase of 703 percent (7.0 percent annual increase). At the small crossings, delays for people traveling are forecast to represent a lost economic opportunity of $515.3 million in GDP ($365.1 million to the U.S., $150.2 million to Mexico) in 2050 compared to $51.2 million in 2019, a cumulative increase of 906 percent (8.0 percent annual increase).

In 2050, the border crossing forecast to have the largest economic impact from delays is the Yselta- Zaragoza with a lost economic opportunity of $381.6 million in GDP ($263.6 million to the U.S., $118.0 million to Mexico) in 2050, a cumulative increase of 528.6 percent (6.1 percent annual increase) from $60.8 million in 2019.

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\(^{30}\) Delay for POVs is estimated as the difference between the total crossing time and the minimum crossing time (10th percentile crossing time in 2019). Delay for pedestrians and bicycles estimated as the wait time.

\(^{31}\) Estimated using a value of time of $8.69 per hour (reflects weighted average of U.S. and Mexican values of time based on income and population) and an average vehicle occupancy of 1.67 people per vehicle.
Note that the impacts of delays on GDP, employment, and income are negative.

Future Delays for the Movement of People

**EL PASO/SANTA TERESA/CHIHUAHUA REGION**

$1.2 BILLION IMPACT ON GDP IN 2050

U.S. SIDE: $802.7 MILLION
MEXICO SIDE: $363.5 MILLION

U.S. SIDE REPRESENTS 17 THOUSAND JOBS
MEXICO SIDE REPRESENTS 12 THOUSAND JOBS

**LAREDO/COAHUILA/NUEVO LEÓN/TAMAULIPAS REGION**

$803.1 MILLION IMPACT ON GDP IN 2050

U.S. SIDE: $518.2 MILLION
MEXICO SIDE: $284.9 MILLION

U.S. SIDE REPRESENTS 11 THOUSAND JOBS
MEXICO SIDE REPRESENTS 9 THOUSAND JOBS

**RIO GRANDE VALLEY/TAMAULIPAS REGION**

$1.8 BILLION IMPACT ON GDP IN 2050

U.S. SIDE: $1.4 BILLION
MEXICO SIDE: $421.7 MILLION

U.S. SIDE REPRESENTS 29 THOUSAND JOBS
MEXICO SIDE REPRESENTS 14 THOUSAND JOBS
7.6 Economic Costs of Highway Congestion

The highway system is the critical transportation link supporting binational trade crossing the Texas-Mexico border with 80 percent of this trade crossing on the highway network. In addition, 79 percent of the movements of people across the border are facilitated by the highway network.

Although delays at border crossings represent large lost economic opportunities, delays on north-south routes that access the border further reduce economic opportunities. The cost of moving goods is increased by these delays, which increases their prices and affects demand. Delays also cause POVs to spend additional time in traffic.

7.6.1 Current Economic Costs of Highway Congestion in 2019

In 2019, highway congestion in the Texas-Mexico border region caused nearly 125 million vehicle-hours of delay on major corridors, valued at approximately $2.9 billion. Most of that congestion was concentrated in urban areas and around the border crossings.32

The largest concentration of CMV delays on main north-south corridors were on I-35/FH 85 in the Laredo region, while the largest east-west corridor CMV delays were on I-10 in the El Paso region. As with CMVs, POV delays on east-west corridors were highest along I-10, but north-south POV delays were highest along I-69E near Brownsville and I-69W Laredo. I-10 is significantly more congested

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32 Congestion data is from Texas SAM-V4 model.
than the other four main east-west corridors, with more than half of all CMV vehicle-hour delays and almost two-thirds of all POV delays.

- Users of the main north-south corridors in the Texas-Mexico border region currently spend approximately 57 million vehicle-hours in delay annually. This is valued at approximately $1.3 billion for POVs and CMVs.
- Users on the main east-west corridors in the region spent more than 68 million vehicle-hours in delay during 2019. The economic value of that lost time is more than $1.6 billion.
- This roadway congestion reduces the demand for exported goods, which results in $10.1 million in lost GDP for the U.S. and $5.3 million in lost GDP for Mexico. Nearly three-fourths of that impact is due to congestion on north-south corridors.  

Note that the impacts of congestion on GDP, employment, and income are negative.

### 7.6.2 Future Economic Costs of Highway Congestion in 2050

By 2050, highway congestion in the Texas-Mexico border region is forecast to increase significantly if current trends continue. Time lost to delays on major corridors is forecast to increase from nearly 125 million vehicle-hours of delay in 2019 to 1.9 billion vehicle-hours of delay in 2050.  

Congestion along I-69E near Brownsville and I-69W near Laredo is forecast to worsen significantly by 2050, so that these corridors are forecast to have the highest CMV delays, instead of I-35/FH 85. The delays on I-69E and I-69W are forecast to account for more than 90 percent of all POV delays in 2050. I-10 is forecast to remain the most congested east-west corridor for both CMVs and POVs.

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33 The GDP impact of highway congestion is considerably smaller than the value of the time to users because only a portion of trips affect the GDP and goods tend to move long distances.

34 Congestion data is from Texas SAM-V4 model.
Highway congestion is forecast to increase considerably between 2019 and 2050. Total vehicle-hours in congestion are forecast to increase from 125 million hours in 2019 to 1.9 billion hours in 2050. Overall delay hours are forecast to increase by a factor of 10 on east-west corridors and by a factor of 18 on north-south corridors.

Users of the main north-south corridors in the Texas-Mexico border region are forecast to spend approximately 1 billion vehicle-hours in delays in 2050. This time is valued at approximately $24.6 billion for POV and CMV drivers per year.

Users on the main east-west corridors are forecast to spend 0.8 billion vehicle-hours in delays in 2050. The value of that lost time increases to approximately $20.1 billion.

This roadway congestion can reduce the demand for exported goods, which is forecast to result in $362.7 million in lost GDP for the U.S. in 2050 and $122.7 million in lost GDP for Mexico. Nearly 80 percent of that impact is forecast due to congestion on north-south corridors.

Figure 7.6-3. Economic Costs of Highway Congestion on North-South Corridors (2050)

Figure 7.6-4. Economic Costs of Highway Congestion on East-West Corridors (2050)

Note that the impacts of congestion on GDP, employment, and income are negative.

7.6.3 Costs of Highway Congestion within 100 miles of the Border

Highway congestion on major corridors within just 100 miles of the border lowered GDP by $1.8 million in the U.S. and $0.9 million in Mexico in 2019. More than three-fourths of the time spent in congestion was experienced by POVs. Congestion delays are expected to increase by 749 percent between 2019 and 2050.

Congestion along major corridors close to the border can increase the cost of goods and reduce personal trip spending. The economic impacts of the resulting lower demand for goods and services are felt in both countries.
More than two-thirds of the time lost to congestion within 100 miles of the border is experienced by POVs. They accounted for approximately 90 percent of the total time lost to congestion in 2019, and they are forecast to account for 85 percent of the time lost in 2050.

By 2050, congestion on major corridors within 100 miles of the border is forecast to grow by more than 749 percent. In 2019, CMVs and POVs lost more than 14 million vehicle-hours to congestion. By 2050, they are forecast to lose more than 106 million vehicle-hours. The time lost can be valued at $204 million in 2019 and at more than $1.5 billion in 2050.

In 2019, congestion along I-35/FH 85 and I-10 resulted in the most delays for CMVs and POVs. In 2019, approximately 80 percent of CMV and POV time in congestion within 100 miles of the border occurs on those two corridors.

From 2019 to 2050, congestion is forecast to worsen the most along I-69E around Brownsville and along I-69W around Laredo.

Highway congestion within 100 miles of the border is responsible for $1.8 million less in U.S. GDP and $0.9 million less in GDP in Mexico in 2019. By 2050, the impact of congestion with 100 miles of the border is forecast to reduce GDP by $46.3 million in the U.S. and $14.2 million in Mexico.

Note that the impacts of congestion on GDP, employment, and income are negative.
7.7 Summary of Findings

The Texas-Mexico border facilitates jobs and economic growth through the efficient movement of people and goods between the U.S. and Mexico and supports social and cultural ties between Texas and Mexico.

In 2019, the Texas-Mexico border generated nearly $352.5 billion in GDP due to the combined movement of people and goods: $206.4 billion in the U.S. and $146.1 billion in Mexico. Most of this impact was due to the movement of goods, $199.9 billion in the U.S. and $143.3 billion in Mexico, but the movement of people also contributed over $9.3 billion, $6.5 billion in the U.S. and $2.8 billion in Mexico, in GDP.

![Figure 7.7-1. Percentage of GDP Impact Attributable to the Movement of People and Goods (2019)](image1)

The economic impact of the Texas-Mexico border has grown significantly since the Great Recession of 2009, and now exceeds the pre-recession levels of 2006. Between 2006 and 2019, the Texas-Mexico border contributed more than $4.2 trillion dollars to the U.S. and Mexican economies.
In 2019, the combined movement of people and goods generated 7.4 million jobs on both sides of the border: 1.9 million jobs in the U.S. and 5.5 million jobs in Mexico. These jobs support national, state, and regional economies in both the U.S. and Mexico.

The economic impact of the Texas-Mexico border extends across the Texas-Mexico border region, Texas, the Mexican border states and the entire U.S. and Mexico.

Much of the trade in the higher-value categories, such as durable goods, moves to or from states far away from the border, including the industrial heartland of the American Midwest, where the growth of regional economic manufacturing clusters has been most prevalent. Continued growth in these sectors, and maintenance of well-paying jobs throughout the country, depends on a well-functioning border.
Delays at border crossings result in missed economic opportunities. These delays, as measured by crossing times, represent more than $2.7 billion in lost GDP in 2019. Due to increasing demand and delays, these lost opportunities are forecast to increase to $119.3 billion in GDP by 2050.\textsuperscript{35}

The capacity of the transportation network to support efficient border crossings has a significant effect on the national, regional, and border economies of both the U.S. and Mexico currently and in the future. The efficiency of the network affects industry decisions on whether to manufacture in North America or to import from Asia. Many manufacturers have said they would substantially reduce their cross-border trade with a 10 percent increase in delays.\textsuperscript{36}

The value of reducing crossing time delays at the border could unlock up to $2.7 billion in potential GDP gains (reduction of more than 11 million vehicle-hours of delay) in 2019 and up to $119.3 billion (more than 324 million vehicle-hours of delay) in 2050.

Each reduction in vehicle-hours of delay has a greater impact on GDP in 2050 compared to 2019 because CMVs are forecast to make up a greater percentage of vehicles crossing the border. The reduction in vehicle-hours of delay has a substantial effect on economic output, jobs, and personal income in the U.S. and Mexico. The value of this potential economic opportunity from 2020 to 2050 is approximately $550.1 billion.\textsuperscript{37} To put this in perspective, that amount represents over 45 percent of Mexico’s current GDP.

If existing infrastructure is not upgraded to meet future demands, the continued increase in border delays will have even more serious impacts on the economies of the Texas-Mexico border region,

\textsuperscript{35} Estimated using additional data collected by TTI and includes the entire journey time for a vehicle entering and leaving the border crossing. Since vehicles must traverse the crossing, not all of this journey time can be eliminated by crossing improvements.

\textsuperscript{36} From a survey of key employers conducted for the Texas-Mexico Border Transportation Master Plan (BTMP).

\textsuperscript{37} Present value calculated by interpolating results between 2019 and 2050 and discounting using a 7 percent discount rate.
Texas, the Mexican border states, and the U.S. and Mexico overall. Effectively addressing these future needs has the potential to unlock up to $119.3 billion in economic opportunities by 2050.

Infrastructure investments in border crossings and the Texas-Mexico multimodal transportation network will help reduce delays, which negatively impact the economies of the U.S. and Mexico.

Facilitating the flow of goods across the Texas-Mexico border is important for the U.S. and Mexico to remain competitive with other nations. These investments will increase regional trade in high, value-added manufactured goods and help preserve jobs in both countries.

The results of the economic analysis presented in this chapter will be used in other chapters to inform the assessment of needs (Chapter 5), and identify and evaluate strategies to address current and future needs (Chapter 8).
Chapter 8

Process to Identify and Evaluate Strategies to Address Current and Future Needs
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Appendix 8A. Information Sources for Strategy Identification
Chapter 8  Process to Identify and Evaluate Strategies to Address Current and Future Needs

The purpose of this chapter is to outline the framework and the process to identify and evaluate strategies to address the current and future needs of moving people and goods across the Texas-Mexico border and the border region. The needs assessment presented in Chapter 5, combined with the 2050 forecasts presented in Chapter 6 and the economic analysis presented in Chapter 7, form the foundation for the Texas-Mexico Border Transportation Master Plan (BTMP) strategies identification.

The identification of strategies combines the identified challenges to the efficient movement of people and goods found during the needs analysis, the BTMP goals, and input from stakeholders to identify potential solutions and organize them into policies, programs, and projects.

The result of applying the evaluation process described in this chapter is presented in Chapter 10 which recommends policies, programs, and projects, and lists programs and projects by impact tier: high, medium, and low. Chapter 11 then provides the recommended programs and projects with a timeframe for execution (short, medium, or long term), which comprises the Implementation Plan for the BTMP.

The strategy evaluation process is used to place the potential solutions into high, medium, and low categories based on the impact these strategies have on addressing current and future needs and attaining BTMP goals. Figure 8.0-1 provides an overview of the process used to identify and evaluate strategies.

The efficient movement of people and goods in the border region requires a multifaceted package of strategies—policies, programs, and projects.
8.1 Definition of Strategies

Strategies is the term used to encompass potential solutions that align with BTMP goals and provide overall guidance on how to address identified current and future needs. Strategies were developed using many sources including prior studies, stakeholder input, and analyses conducted as part of the development of the BTMP. The current and future needs analysis in Chapter 5 and the information on the economic importance of the border in Chapter 7 were also used to suggest strategies that represent the desired characteristics of the border in the future.

Consistent with standard planning efforts, these strategies have been broadly categorized as policies, programs, or projects (Figure 8.1-1). The three types of strategies work together to address the magnitude and complexity of the border region transportation system. Some system needs require a combination of policies, programs, and projects to be more fully addressed.¹

Policies are broad recommendations that set the direction of agencies and provide the foundation for decision making. Programs are a collection of initiatives to achieve a policy direction and consist of actions that are repeatable across multiple platforms or locations. Projects are targeted, location-specific actions undertaken to achieve policy objectives.

Policy, program, and project strategies are not exclusive, but complement one another and work holistically to support the goals of the BTMP.

¹ For example, addressing the issue of increasing border crossing delays for commercial vehicles could require a combination of policies such as demand management, programs such as extended hours of operation, and projects such as additional lanes at border crossings.
8.1.1 Policy Strategies

Policies are broad recommendations that set the direction of agencies and provide the foundation for decisions. For example, the Texas Department of Transportation has a policy that identifies the standards for classifying highways that are in a state of good repair. Maintaining the roads in that condition is a stated priority for the agency.

Policies provide the foundation for programs and projects, can be applied borderwide, and are critical for border crossings and corridors.

Cross-cutting themes identified in Chapter 5 were brought forward by stakeholders as important issues that touched multiple goals. The cross-cutting themes are:

- Binational Coordination, Collaboration, and Cooperation
- Integration of New Technologies
- Data Collection, Harmonization, Sharing, and Analysis
- System Monitoring

High level policies address these types of cross-cutting issues and provide a framework for multi-pronged solutions.

Policies regarding the movement of people and goods can be applied not only along the Texas-Mexico border but often along the entire United States-Mexico border. These types of widely applicable, international, cross-border policies are more likely to attract support from the federal governments in both countries and from multiple states and regions for implementation.

A few examples of suggested policies include:

- Develop a comprehensive strategy for robust, coordinated, and efficient border management and investments.
- Develop a comprehensive and binational mechanism for enhancing the system capacity of existing border crossings and the designated Texas-Mexico corridors, and assessing the feasibility of new infrastructure.

8.1.2 Program Strategies

Programs are a collection of implementable initiatives to achieve a policy direction and consist of actions that are repeatable across multiple platforms or locations.

Programs are strategies that can be considered for multiple locations along the Texas-Mexico border. Many programs address multiple goals. Some programs address both border crossings and corridors, and some apply to the movement of both people and goods.

Unified Cargo Processing, where customs officers from both the U.S. and Mexico inspect commercial motor vehicles (CMVs) together rather than conducting two separate inspections, came from a pilot project at the Mariposa Port of Entry (POE) in Nogales, Arizona. This successful approach has now become a program that is being implemented at several POEs along the Texas-Mexico border.
In addition to the Unified Cargo Processing program, other examples of programs include:

- Establish Regional Texas-Mexico Crossings Stakeholder Groups in each of the three border regions to regularly discuss border transportation needs and solutions.

- Adopt Demand Management Programs, for example, variable message signs, signalization, and ramp meters, at border crossings or on the border transportation system to better utilize existing system capacity.

Programs also include the development of studies that are needed to inform decisions or to take action across multiple platforms or locations. Some examples of studies include:

- Develop a Texas-Mexico Oversize/Overweight Border Study to understand the needs for oversize/overweight corridors within the border region.

- Conduct a Border Crossing Experience Study that examines each step of cross-border trips and makes recommendations for improving the process and relieving delays at border crossings and on designated corridors.

### 8.1.3 Project Strategies

Projects are targeted, location-specific actions undertaken to achieve a policy direction. Projects often involve a new addition, renovation, or installation. In the context of the BTMP, projects are divided into two categories:

- **Physical capacity**, which usually involves a new border crossing or a new road, or an expansion of existing infrastructure with additional lanes or improved access points.

- **Operational capacity**, which often involves the improvement of procedures and/or processes related to the operation of existing infrastructure, including the addition of technology that can increase throughput at existing border crossings.

Examples of a new physical capacity project might be:

- The addition of a new lane on a corridor highway or a new border crossing
- The construction of a new Free and Secure Trade (FAST) lane at a border POE

Examples of an operational capacity project include:

- Shifting from manual to automated toll collection at a specific corridor or border crossing
- Expanding the number of inspection booths and approach lanes at an existing border crossing
8.2 Identification of Strategies to Address Current and Future Needs

This section summarizes the different sources and processes used to identify potential strategies. The complete list of strategies, categorized into polices, programs, and projects, is presented in Chapter 10 by impact tier, and in Chapter 11 by timeframe.

The strategies included in the BTMP came from an analysis of multiple sources including document review, stakeholder input, and the BTMP current and future needs assessment.

8.2.1 Review of Existing Plans

Over 200 documents related to mobility, transportation, and economic development were collected and analyzed from across all three border regions as well as the U.S. and Mexico.

The documents were reviewed to inform the identification of policy, program, and project elements related to the BTMP goals and objectives, as well as to the issues and needs identified in Chapter 5. Other relevant plans were reviewed for compatibility and consistency with program ideas. For projects, the process included an assessment of more than 25 recently completed local, regional, and state transportation plans and studies relevant to the border region, Texas, and Mexico.

Table 8.2-1 summarizes the key data sources and the related strategy element they informed. Appendix 8A provides a full list of reviewed information. The documents were reviewed and the content was used for development of relevant policy and program ideas, for the identification of current and future projects, and for the criteria used to determine the impact and timeframe for strategies.
### Table 8.2-1. Summary of Key Reports and Studies Reviewed

<table>
<thead>
<tr>
<th>Departments</th>
<th>Document</th>
<th>Policy</th>
<th>Program</th>
<th>Project</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Customs and Border Protection (CBP)</strong></td>
<td>2019 5-year Capital Improvement Plan</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>2016 Transformative Business Initiatives Report</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td><strong>General Services Administration (GSA)</strong></td>
<td>Land Ports of Entry Reports</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td><strong>Department of Homeland Security</strong></td>
<td>Beyond the Border: A Shared Vision of Perimeter Security and Economic Competitiveness</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td><strong>Federal Highway Administration</strong></td>
<td>2019–2021 U.S.-Mexico Joint Working Committee on Transportation Planning Work Plans</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td><strong>Office of the President of Mexico</strong></td>
<td>2014–2018 National Infrastructure Agreement</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td><strong>Secretaría de Comunicaciones y Transportes (SCT)</strong></td>
<td>SCT Programs List</td>
<td></td>
<td></td>
<td>X</td>
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<tr>
<td></td>
<td>SCT Border Crossing Projects List</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>SCT Actions to Strengthen Road Safety</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td><strong>Servicio de Administración Tributaria (SAT)</strong></td>
<td>Plan de Modernización de Aduanas</td>
<td></td>
<td></td>
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<tr>
<td><strong>Border Trade Advisory Committee (BTAC)</strong></td>
<td>2019–2020 Meeting minutes and presentations</td>
<td></td>
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<tr>
<td><strong>TxDOT</strong></td>
<td>2020 Unified Transportation Program (UTP)</td>
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<tr>
<td></td>
<td>2019–2022 Statewide Transportation Improvement Program (STIP)</td>
<td></td>
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<td>X</td>
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<td></td>
<td>2019–2022 Pavement Management Plan</td>
<td></td>
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<td>X</td>
</tr>
<tr>
<td></td>
<td>2018 International Trade Corridor Plan</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2018 Freight Mobility Plan</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<tr>
<td></td>
<td>2020 Texas Rail Plan</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>2019 Border District Trade Transportation Report</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>2019 Texas-Mexico International Bridges and Border Crossings</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>Texas-Mexico Border Strategic Transportation Blueprint</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>Ports to Plains Corridor information</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Strategic and Economic Development Plans</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>Regional Mobility and Transportation Plans</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>Project list from El Paso, Laredo, and Rio Grande Valley planning agencies</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>Mobility and Transportation Plans by Mexican border states</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Status reports for strategic projects in Mexican border states</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>Planning documents by Municipio Planning Institutes in Mexico</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td><strong>Private Sector</strong></td>
<td>Grupo México Investment Plan and Annual Reports</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Kansas City Southern Mexico Annual Reports</td>
<td></td>
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<td>X</td>
</tr>
</tbody>
</table>
8.2.2 Stakeholder Input to Strategy Identification

As presented in Chapter 1, the development of the BTMP comprised four phases: (1) data collection, (2) multimodal corridor designation and needs assessment, (3) forecast and economic analysis, and (4) identification of strategies and preliminary recommendations. Stakeholder input was a key element throughout.

Strategies to address issues and needs were developed based on the data-driven analysis conducted as part of this BTMP. Examples of this data-driven analysis are presented in Figure 8.2-1 and Figure 8.2-2.

The BTMP process included multiple opportunities for binational stakeholders to provide input on strategies to address current and future needs. Discussions during these sessions provided input into all types of strategies: policies, programs, and projects. As described in Chapter 9, regularly scheduled meetings and presentations that were part of the stakeholder engagement plan for the BTMP featured opportunities for information on strategies to be collected. These opportunities included:

- Regular engagement with the Border Trade Advisory Committee (BTAC), which consists of individuals who serve as advisors to TxDOT for decisions affecting trade and the movement of freight at the Texas-Mexico border. BTAC meetings in April and June 2020 were used to collect input on current and future needs, and meetings in July, August, and September 2020 were used to collect input on strategies to address them.

- Discussions with members of the Binational Regional Steering Committees (BNRSCs). More than 300 people representing the U.S. and Mexico participated in the BNRSCs, providing input on the current and future needs and on the strategies to address those needs. BNRSCs were held across the following BTMP regions:
  - El Paso/Santa Teresa/Chihuahua
  - Laredo/Coahuila/Nuevo León/Tamaulipas
  - Rio Grande Valley/Tamaulipas

- Presentations to and interactions with experts in border affairs from the Joint Working Committee on Border Planning, the Binational Bridges and Border Crossings Group, and other binational groups such as the International Bridges Steering Committee in the...
El Paso/Santa Teresa/Chihuahua region. These interactions served to identify strategies being used in other border regions and their degree of applicability to the Texas-Mexico border.

- Focus groups, public meetings, and stakeholder workshops in the U.S. and Mexico. Workshops and listening sessions were held virtually and in person at multiple locations in the Texas-Mexico border region and in Mexico City. This process collected feedback from over 700 people on areas such as opportunities to improve the efficiency of the movement of people and goods across the Texas-Mexico border.
- Binational coordination meetings with federal and state representatives from the U.S. and Mexico where proposed solutions were presented and discussed.

Additional opportunities for stakeholders to provide input were created during the identification of strategies and preliminary recommendations phase. The purpose of these opportunities was specifically to collect information about policies, programs, and projects and to provide detailed information on how those strategy types support the BTMP goals. Key additional opportunities for stakeholder input include:

- Workshops with regional stakeholders in each of the BTMP regions to validate regional needs and to discuss proposed strategies to address them, including projects.
- Targeted phone calls and focus groups with individual stakeholders or groups of stakeholders, including staff from federal, state, and local agencies on both sides of the border, and private-sector representatives. These phone calls and focus groups were used to collect input on draft policy, program, and project recommendations, and the criteria that should be used to determine the effectiveness of the strategies.

To develop a comprehensive borderwide projects list, projects and project timeframes were collected from project sponsors and refined through:

- Five meetings with Mexican state governments and stakeholders to document local, state, and federal plans and priorities in Mexico impacting the border region. These meetings took place remotely during July 2020.
- Six workshops and meetings focused on project identification and refinement with stakeholders in each of the three border regions, including TxDOT district engineers, city, county, Regional Mobility Authority and Metropolitan Planning Organization leadership and staffs, and customs and border protection to confirm, add, and refine future proposed projects for BTMP evaluation.
- Six presentations provided by each of the three border regions to the September 2020 BTAC and BNRSC meetings to inform the final list of projects to be evaluated in the BTMP.
- Fifteen interviews with individuals and small groups of stakeholders as follow-up discussions to further refine and finalize the project database for BTMP evaluations at the city, local, regional, and state levels.

Finally, in order to provide additional input into their priorities, stakeholders were also asked to weigh the BTMP goals to indicate which they believed were most important to supporting the movement of people and goods in the border region.
Stakeholders and BTAC and BNRSC members were asked to rank goals, and then BTAC members were asked to weight those goals borderwide, while BNRSC members were asked to weight the goals by importance for their own region: El Paso/Santa Teresa/Chihuahua, Laredo/Coahuila/Nuevo León/Tamaulipas, or Rio Grande Valley/Tamaulipas. Members were asked to weigh the goals in July and August 2020 to determine whether priorities had changed. The final query, in August, was asked primarily to determine whether the COVID-19 pandemic had changed members’ opinions regarding the importance of various goals. In fact, the regional stakeholders, and particularly those in the Rio Grande Valley/Tamaulipas Region, did place more of an emphasis on cross-border resiliency as a priority as a result of the pandemic, although its place in the average weight ranking did not change. The weights from the borderwide stakeholders plus the three regions were then averaged. Table 8.2-2 shows the final results.

<table>
<thead>
<tr>
<th>BTMP Goals</th>
<th>BTAC Weights</th>
<th>El Paso/Santa Teresa/Chihuahua</th>
<th>Laredo/Coahuila/Nuevo León/Tamaulipas</th>
<th>Rio Grande Valley/Tamaulipas</th>
<th>Average Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mobility and Reliability</td>
<td>26.7%</td>
<td>22.0%</td>
<td>24.2%</td>
<td>18.2%</td>
<td>23.0%</td>
</tr>
<tr>
<td>Economic Competitiveness</td>
<td>18.8%</td>
<td>18.0%</td>
<td>17.2%</td>
<td>17.2%</td>
<td>17.8%</td>
</tr>
<tr>
<td>Safety and Security</td>
<td>10.9%</td>
<td>13.0%</td>
<td>17.2%</td>
<td>11.1%</td>
<td>13.0%</td>
</tr>
<tr>
<td>Connectivity</td>
<td>10.9%</td>
<td>11.0%</td>
<td>11.1%</td>
<td>12.1%</td>
<td>11.3%</td>
</tr>
<tr>
<td>Cross-border Resiliency</td>
<td>8.9%</td>
<td>7.0%</td>
<td>9.1%</td>
<td>17.2%</td>
<td>10.6%</td>
</tr>
<tr>
<td>Asset Preservation</td>
<td>5.0%</td>
<td>7.0%</td>
<td>6.1%</td>
<td>6.1%</td>
<td>6.0%</td>
</tr>
<tr>
<td>Sustainable Funding</td>
<td>6.9%</td>
<td>10.0%</td>
<td>6.1%</td>
<td>8.1%</td>
<td>7.8%</td>
</tr>
<tr>
<td>Customer Service</td>
<td>7.9%</td>
<td>7.0%</td>
<td>7.1%</td>
<td>6.1%</td>
<td>7.0%</td>
</tr>
<tr>
<td>Stewardship and Sustainability</td>
<td>3.0%</td>
<td>5.0%</td>
<td>2.0%</td>
<td>4.0%</td>
<td>3.5%</td>
</tr>
</tbody>
</table>

The average weights in the table were used as one factor in the process of evaluating both programs and policies. The evaluation process is explained in Section 8.4.
8.2.3  Current and Future Needs Assessment and Strategy Identification

As presented in Chapter 5, current needs at the Texas-Mexico border were identified through a data-driven process.

Information related to the performance of the Texas-Mexico transportation system, including border crossings, and supporting facilities, was collected and analyzed to identify impediments to the efficient movement of people and goods.

Future needs related to the movement of people and goods along the Texas-Mexico border were identified using future forecasts of border crossing activity. Future forecasts were developed as part of the BTMP for the year 2050, consistent with the forecast year for the Texas Transportation Plan 2050. The analysis of future needs was conducted at the regional level, and by border crossing and individual corridor, and is also presented in Chapter 5.

As an example, the process of identifying current and future needs focused on BTMP goals and performance metrics is shown in Table 8.2-3.

### Table 8.2-3. BTMP Goal and Metrics

<table>
<thead>
<tr>
<th>BTMP Goal</th>
<th>Metrics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mobility and Reliability</td>
<td>▪ Utilization of capacity at border crossings along the Texas-Mexico border</td>
</tr>
<tr>
<td>Safety and Security</td>
<td>▪ Roadway crash incidents and hot-spot crash locations</td>
</tr>
<tr>
<td></td>
<td>▪ Railroad/vehicle hot-spot crash locations</td>
</tr>
<tr>
<td>Asset Preservation</td>
<td>▪ Roadway pavement conditions</td>
</tr>
<tr>
<td></td>
<td>▪ Bridge conditions</td>
</tr>
<tr>
<td></td>
<td>▪ Border crossing facilities, which incorporates basic maintenance including pavement conditions, as well as the ability to meet current needs for space and safety</td>
</tr>
</tbody>
</table>

8.3  Linking Strategies to BTMP Goals, Issues, and Needs

As described in Chapter 2, binational public and private stakeholders helped identify the nine BTMP goals. In Chapter 5, issues and needs were identified and linked to each of the nine BTMP goals. The chapter catalogued issues and needs across border crossings and corridors. Border crossings and corridors issues and needs fall into two broad categories: those that require changes to processes to solve and those that require performance improvement
This section reinforces the connection between BTMP goals, issues, and needs by linking them to strategies. This is a key step in the development of BTMP recommendations.

To determine how each strategy supports the BTMP goals and addresses the identified issues and needs, the process described in this chapter cross referenced strategies with both the BTMP goals and the issues and needs. This process is shown in Figure 8.3-1.

Figure 8.3-1. Developed Strategies Connect to Current and Future Needs and Ultimately BTMP Goals

Strategies were linked separately to the two types of BTMP goals, since the process-related goals align more naturally with policies and programs, while the performance-related goals align more naturally with projects. However, the three types of strategies—policies, programs, and projects—were identified for each BTMP goal whenever this was appropriate.

An example of the alignment of strategies with the BTMP goals is presented in Figure 8.3-2. The examples are for three of the process-related BTMP goals—sustainable funding, economic competitiveness, and cross-border resiliency—and focus on policies and programs due to their more natural alignment with these types of goals.

Figure 8.3-2. Example of Alignment between BTMP Goals and Strategies

<table>
<thead>
<tr>
<th>Goal</th>
<th>Issues and Needs</th>
<th>Example of Strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Economic Competitiveness</td>
<td>Border crossing delays, improvements to U.S. and Mexico policy coordination infrastructure linkage, and opportunity to withstand potential disruptions.</td>
<td>Policy: harmonize Texas-Mexico policy coordination to support current and future trinational economic competitiveness (U.S., Mexico, and Canada) Program: Explore expanding the role of the border trade advisory committee to facilitate ongoing coordination on transportation infrastructure planning between Texas and its partner states in Mexico</td>
</tr>
<tr>
<td>Cross-border Resiliency</td>
<td>Enhanced network redundancy and programmatic planning for systemic processes, procedures, and investments in the case of unforeseen events that disrupt the efficient movement of people and goods across the border.</td>
<td>Policy: develop a comprehensive Texas-Mexico policy framework for a resilient border Program: Develop Texas-Mexico border region incident response plans to prepare for potential border transportation system disruptions</td>
</tr>
<tr>
<td>Sustainable Funding</td>
<td>Need for sustainable funding opportunities for border crossings and international corridors based on demand</td>
<td>Policy: develop dedicated mechanisms to provide sustainable border region funding and financing Program: Develop a dedicated Texas-Mexico trade lanes funding program</td>
</tr>
</tbody>
</table>

The alignment among strategies, BTMP goals, and issues and needs provides a blueprint for how the BTMP proposes to address current and future challenges to the efficient movement of people and goods.

A list of all the policies, programs, and projects identified in the BTMP is presented in Chapter 10.
8.4 Process for Developing the Evaluation Criteria

8.4.1 Policy Evaluation Criteria

As broad recommendations that set the direction of agencies and provide the foundation for decisions, policies are an important component of the BTMP. Like all three strategy types, policy ideas came from the review of literature and plans related to the border, from the extensive outreach and public engagement process, and from the current and future issues and needs of the Texas-Mexico multimodal transportation system identified in Chapter 5.

The BTMP identifies 22 recommended policies related to border crossings and corridors in alignment with goals. Across these goals, there are five policies specific to border crossings, eight policies specific to corridors, and nine policies that apply to both border crossings and corridors. In order to be included in the BTMP, policies were determined to meet one or more of the high-level criteria that emerged from the BTMP process literature review, stakeholder input, and the issues and needs assessment. For inclusion, policies had to meet five overarching criteria:

- Support new or improved infrastructure - border crossings, corridors or both
- Provide overarching guidance for the more specific programs or projects
- Be broadly applicable in both the United States and Mexico, and in all of the three border regions
- Link to one or more of the BTMP goals shown in Table 8.4-1
- Address an identified issue or need

Table 8.4-1. Summary of Policy Criteria

<table>
<thead>
<tr>
<th>BTMP Goals</th>
<th>Criteria for Policies</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Process Improvement</strong></td>
<td></td>
</tr>
<tr>
<td>Sustainable Funding</td>
<td>- Supports funding for program and project implementation</td>
</tr>
<tr>
<td>Economic Competitiveness</td>
<td>- Addresses border crossing times</td>
</tr>
<tr>
<td></td>
<td>- Improves goods movement</td>
</tr>
<tr>
<td>Cross-border Resiliency</td>
<td>- Enhances network redundancy</td>
</tr>
<tr>
<td></td>
<td>- Provides border crossing redundancy within and between</td>
</tr>
<tr>
<td></td>
<td>border crossings</td>
</tr>
<tr>
<td>Stewardship and</td>
<td>- Reduces environmental and community impacts</td>
</tr>
<tr>
<td>Sustainability</td>
<td></td>
</tr>
<tr>
<td>Customer Service</td>
<td>- Support of Public Education and Awareness</td>
</tr>
<tr>
<td></td>
<td>- Improves data collection, sharing, harmonization and</td>
</tr>
<tr>
<td></td>
<td>analysis</td>
</tr>
<tr>
<td><strong>Performance Improvement</strong></td>
<td></td>
</tr>
<tr>
<td>Mobility and Reliability</td>
<td>- Improves operational efficiencies</td>
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<tr>
<td></td>
<td>- Enhances system capacity</td>
</tr>
<tr>
<td></td>
<td>- Improves Texas-Mexico coordination</td>
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<tr>
<td></td>
<td>- Enables the use of new technologies</td>
</tr>
<tr>
<td></td>
<td>- Improves performance monitoring</td>
</tr>
<tr>
<td>Connectivity</td>
<td>- Increases first and last mile connections</td>
</tr>
<tr>
<td></td>
<td>- Improves connectivity between border crossings</td>
</tr>
<tr>
<td></td>
<td>- Supports connectivity between U.S. and Mexico</td>
</tr>
<tr>
<td>Safety and Security</td>
<td>- Addresses operational efficiency needs</td>
</tr>
<tr>
<td></td>
<td>- Addresses system capacity needs</td>
</tr>
<tr>
<td>Asset Preservation</td>
<td>- Enhances modeling and improves maintenance</td>
</tr>
</tbody>
</table>
8.4.2 Program Evaluation Criteria

Programs are a collection of implementable initiatives intended to achieve a policy direction and consist of actions that are repeatable across multiple platforms or locations. Programs flow directly from the broad policies. As a result, programs can generally be used borderwide and in all three border regions, and are applicable to both the U.S. and Mexico, although the steps to achieve them may be somewhat different in each country or in different regions.

More than 300 ideas emerged from the literature review, stakeholder input, and issues and needs analyses. To be included on the list of potential programs, a program had to have received a level of interest—it was in a relevant document or plan, it was noted by stakeholders during the BTMP process, it was successfully implemented in another location, or it had been identified as addressing a BTMP issue or need. In all, 153 programs were evaluated for the final list.

Unlike a project, which has an indicator of impact or need if it is included on a publicly adopted plan or has been funded, programs are more difficult to quantify. The six evaluation criteria in Table 8.4-2 below were suggested through the BTMP process to help determine those programs that might be most effective.

<table>
<thead>
<tr>
<th>Evaluation Criteria</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Impactful</td>
<td>How effective would the program be on its own in addressing the issue or need it is intended to address?</td>
</tr>
<tr>
<td>Compelling</td>
<td>Does the program address one or more of the four goals that stakeholders have indicated were most important to them (Mobility and Reliability, Economic Competitiveness, Safety and Security, and Cross-border Resiliency)?</td>
</tr>
<tr>
<td>Integrated</td>
<td>Does the program support the overall BTMP vision? How many of the BTMP goals does the program address?</td>
</tr>
<tr>
<td>Repeatable</td>
<td>Is the program already well known and/or successful on at least one side of the border, or has it been used successfully in another border region outside of Texas-Mexico?</td>
</tr>
<tr>
<td>Implementable</td>
<td>How difficult will the program be to implement? Does it require a state or federal legislative change? Would it require multiple agencies to implement?</td>
</tr>
<tr>
<td>Desirable</td>
<td>Is there a state or federal law or policy in the U.S. or Mexico that requires some component of this program to be undertaken (i.e. is it required by the U.S.-Mexico-Canada Agreement)?</td>
</tr>
</tbody>
</table>

8.4.3 Project Evaluation Criteria

The process to assign an impact category for each project included three components:

- Evaluating the contribution of each project to the achievement of individual BTMP goals
- Incorporating the relative importance of each BTMP goal
- Assigning each project to an impact category

The contribution of each project to the achievement of individual BTMP goals was assessed using qualitative and quantitative criteria. Criteria are based on the needs assessment presented in
Chapter 5, and they were confirmed by meetings with BTAC, the BNRSCs, and meetings and interviews with border stakeholders, federal agencies, and TxDOT staff. Each criterion is meant to capture key issues and needs presented in the BTMP and distinguishes between border crossings and corridors.

For example, Chapter 5 identified increasing border crossing times as a key measure impacting the goal of Mobility and Reliability for border crossings. Projects were therefore reviewed for their impact on reducing border crossing times as a measure of their impact on border crossing projects.

Table 8.4-3 shows the evaluation criteria for projects and their alignment with each of the BTMP goals.

<table>
<thead>
<tr>
<th>BTMP Goals</th>
<th>Criteria for Border Crossings</th>
<th>Criteria for Corridors</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Quantitative</strong></td>
<td>▪ Total border crossing times by CMV and POV, border wait times by pedestrians</td>
<td>▪ Congestion level in corridor</td>
</tr>
<tr>
<td>Mobility and Reliability</td>
<td>▪ Crashes by total, and by pedestrian, POV, and CMV modes around border crossings</td>
<td>▪ Total crashes by pedestrian (local facilities), POV, and CMV modes</td>
</tr>
<tr>
<td>Safety and Security</td>
<td>▪ Asset condition of international bridges</td>
<td>▪ Pavement condition</td>
</tr>
<tr>
<td>Asset Preservation</td>
<td>▪ Supply chain – total border crossing times, CMVs</td>
<td>▪ Supply chains – congestion in corridors</td>
</tr>
<tr>
<td></td>
<td>▪ Supply chains – proximity to warehousing and employment centers</td>
<td>▪ Supply chains – proximity to warehousing and employment centers</td>
</tr>
<tr>
<td></td>
<td>▪ Supply chain – truck volumes and commodity flow tons/value</td>
<td>▪ Supply chain – CMV volumes</td>
</tr>
<tr>
<td>Economic Competitiveness</td>
<td>▪ Proximity/connectivity to transfer facilities, airports, bus stations, and other border crossings</td>
<td>▪ Proximity/connectivity to transfer facilities, airports, bus stations, border crossings, and seaports</td>
</tr>
<tr>
<td></td>
<td>▪ Proximity/connectivity with warehousing and employment centers</td>
<td>▪ Proximity/connectivity with warehousing and employment centers</td>
</tr>
<tr>
<td>Connectivity</td>
<td>▪ Network redundancy</td>
<td>▪ Network redundancy</td>
</tr>
<tr>
<td>Cross-border Resiliency</td>
<td>▪ Funding status to support project implementation (fully, partially, unavailable)</td>
<td>▪ Funding status to support project implementation (fully, partially, unavailable)</td>
</tr>
<tr>
<td>Sustainable Funding</td>
<td>▪ Community enhancement (safety, mobility, noise, air quality, hazardous material)</td>
<td>▪ Community enhancement (safety, mobility, noise, air quality, hazardous material)</td>
</tr>
<tr>
<td>Stewardship and Sustainability</td>
<td>▪ Stakeholders actively identified project priorities in BTMP outreach</td>
<td>▪ Stakeholders actively identified project priorities in BTMP outreach</td>
</tr>
</tbody>
</table>
### 8.5 Process to Evaluate Strategies

Policies, programs, and projects (collectively, *strategies*) were identified then evaluated based on BTMP goals and objectives and the identified current and future issues and needs.

The strategy evaluation process is shown in Figure 8.5-1. This evaluation process provides the basis for the BTMP recommendations (Chapter 10) and the implementation plan (Chapter 11).

**Figure 8.5-1. Methodology for Evaluating Policies, Programs, and Projects**

- **Candidate Policy, Program, Project List**
  - Identified in previous plans and studies
  - Identified through stakeholder input
  - Identified through BTMP analysis of needs

- **Goals and Objectives**
  - Link strategies to BTMP goals and objectives

- **Policy, Program, Project Evaluation**
  - Data-driven
  - Stakeholder input
  - Transparent process

- **Determine Program and Project Impact**
  - High, medium, and low impact tiers
  - Border region, border crossings, and corridors

#### 8.5.1 Evaluation of Policy Strategies

Candidate policy strategies are rooted in the nine goals identified in Chapter 2 and more fully defined in Chapter 5, and the identification by stakeholders of broad cross-cutting themes in Chapter 5. The interconnections of the goals and the broad themes led to the recognition that high level policies would provide a framework for effective guidance in recommending programs and projects.

Throughout the BTMP process, stakeholders coalesced around 22 policies. Across the nine goals, there are five policies specific to border crossings, eight policies specific to corridors, and nine policies that apply to both border crossings and corridors.

Ideas for policies came from an extensive literature review process of relevant border and regional documents, and from the extensive stakeholder outreach sessions described earlier. Related TxDOT documents, such as the *Strategic Plan*, *Texas Unified Transportation Plan*, and the *Texas Freight Mobility Plan*, followed a similar approach to identifying policies.

Policy ideas that were identified from the various sources were reviewed to determine whether they:

- Support new or improved infrastructure - border crossings, corridors or both
- Provide overarching guidance for more specific programs or projects
8.5.2 Evaluation of Program Strategies

The list of program strategies was developed from documents and plans relevant to border transportation and mobility in both the U.S. and Mexico, from the BTMP needs analysis process as described in Chapter 5, as well as from the extensive stakeholder outreach process documented in Section 8.2.2 and in Chapter 9.

In Chapter 10, programs were categorized into three tiers—high, medium, and low impact—and were organized by whether they were applicable to border crossings, corridors, or both. The tiers were assigned based on an effort to quantify, as best as possible, the contribution of each candidate program to achieving the BTMP goals and addressing issues and needs.

Points were assigned to each program based on the program’s effectiveness in meeting the six criteria shown in Table 8.4-2. In addition, weightings associated with Table 8.2-2, which shows BTMP goals weighted by stakeholder importance, was also taken into account by receiving its own category in the evaluation criteria. Points were assigned as follows:

- **Tier A** – For most effectively addressing the high priority goals and three or more of the remaining criteria, a program received 3 points.
- **Tier B** – For each of the six criteria, a moderately effective program resulted in 2 points.
- **Tier C** – For each of the six criteria, a marginally effective program was assigned 1 point.

A program that scored between 15 and 18 points in total was considered to be highly impactful, a program that scored between 10 and 15 points was considered to be positively impactful and in the medium tier, and a program that scored lower than 10 was considered to be of positive but marginal impact. The evaluation provides guidance for stakeholders and decision-makers but is not intended to prioritize or “rank” programs.

A group of illustrative programs, assigned by tier, is in Chapter 10. Programs are assigned by the timeframe in which they could be expected to be implemented in Chapter 11.

8.5.3 Evaluation of Project Strategies

The list of project strategies came as a result of carefully reviewing local, regional, and state planning documents and from an extensive series of meetings with border stakeholders, including six workshops and meetings in the three border regions. The meetings and workshops included meetings with the TxDOT border region District Engineers and local and regional agencies. A separate series of interviews and phone calls were held with border regional groups from the U.S. and Mexico in July 2020, as well as federal agencies in the U.S. and Mexico. Five meetings were
Conducted with Mexican stakeholders to document local, state, and federal plans and priorities in Mexico.

The needs analysis conducted for Chapter 5 and additional research for other chapters of the BTMP also provided information on specific projects.

Finally, 69 project sponsors suggested specific projects in their region, and provided information on estimated costs and schedules.

The initial screening process for projects was to eliminate duplicate projects, projects that were outside of the border region and unconnected to border trade or mobility, and suggestions that were deemed to be programs, such as joint inspections. Those program suggestions were added to the program list for review.

Six hundred sixty-one projects were generated from various sources. All projects were part of the evaluation process.

The data-driven evaluation of projects intended to quantify, as best as possible, the contribution of each candidate project to achieving the BTMP goals and addressing the issues and needs identified throughout the BTMP. Projects are organized in Chapter 10 by region, by whether they are border crossing or corridor projects, and by category: mobility and reliability, safety, connectivity, asset preservation, or multimodal.

The evaluation process for projects is presented in Figure 8.5-2.

### Figure 8.5-2. Process to Assign a Data-driven Impact Category to Projects

<table>
<thead>
<tr>
<th>Contribution of Project to Individual BTMP Goals</th>
<th>Relative Importance of each BTMP Goal</th>
<th>Project Evaluation Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>▪ Quantitative and qualitative criteria</td>
<td>▪ Stakeholder-informed weights for each BTMP Goal</td>
<td>▪ Overall project score high, medium and low impact</td>
</tr>
<tr>
<td>▪ Contribution tiers: high, medium and low</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The process to assign an impact category for each project included three components:

- Evaluating the contribution of each project to the achievement of individual BTMP goals
- Incorporating the relative importance of each BTMP goal
- Assigning each project to an impact category
The degree to which each project met the criteria listed in Table 8.4-3 was assessed based on the data collected and analyzed throughout the development of the BTMP. The contribution of a project to each BTMP goal was represented using a tiered system where:

- **Tier “A”** represents a significant contribution by the project on the criteria associated with the BTMP goal (high impact)
- **Tier “B”** represents a positive contribution by the project to the BTMP goal (medium impact)
- **Tier “C”** represents a marginal contribution by the project to the BTMP goal (low impact)

These tiers are then transformed into points—“A” represents 10 points, “B” represents 7.5 points, and “C” represents 5 points—to calculate a numerical score for each project under each BTMP goal.

While measuring projects against goal-specific criteria provides part of the evaluation process, projects are further evaluated by their impact on priority goals. Table 8.2-2 showed the weighted BTMP goals. Goals were weighted to reflect their relative importance as determined by stakeholders—by the BTAC and by stakeholders in each of the three regions. By linking projects to weighted goals, projects are also evaluated based on stakeholder priorities.

The overarching results of the project evaluations are presented in Chapter 10, and the entire list of 661 projects is provided in Appendix 10B. This list also makes up the Implementation Plan for projects and is included in Chapter 11. The timeframe for each project was determined by the project’s placement on local, regional, and state plans, and by the estimated date from project sponsors by which the project will be underway.

### 8.6 Implementation Timeframes for Strategies

In addition to their level of impact, the BTMP also shows programs and projects by timeframe. Chapter 11 places programs and projects into expected timeframes of short term, medium term, or long term. The element of timeframe provides decision-makers with a path forward, laying out shorter term actions that can progress in the next 4 years, as well as enabling preparation for future improvements.

Appendix 11A shows all programs by timeframe, while Appendix 11B shows all projects by timeframe.

#### 8.6.1 Process to Determine Timeframe for Program Strategies

Programs encompass a wide variety of actions, but they are generally not part of an adopted public plan, and do not always follow widely used development processes, as projects do. Similarly, the budget process for programs may differ depending on the agencies taking the lead in implementation. As a result, the criteria for the timing of projects can be difficult to quantify.
The timeframe is intended to quantify only when programs could be underway. Programs, especially those that can be repeated at multiple locations, can sometimes take many years to fully implement. A program that is underway in the short term may not be fully implemented until the long term.

The sources from which programs came helped to provide the criteria for how quickly programs may be able to be implemented. The criteria use a variety of factors, such as success in other locations, costliness, importance, and complexity to provide guidance on timing. Table 8.6-1 shows the nine criteria guiding program timeframes.

Table 8.6-1. Criteria for Program Implementation

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clear</td>
<td>Are the objectives of the program well-developed and well-understood? The clearer and better-developed the program, the easier it would be to implement quickly.</td>
</tr>
<tr>
<td>Compelling</td>
<td>Does the program address one or more of the goals that stakeholders have indicated were most important to them (Mobility and Reliability, Economic Competitiveness, Safety and Security, Connectivity and Cross-border Resiliency)? While this would not necessarily make the program easier to implement, it might elevate the importance.</td>
</tr>
<tr>
<td>Integrated</td>
<td>Does the program support the overall BTMP vision? How many of the BTMP goals does the program address? While this would not necessarily make the program easier to implement, it might elevate the importance and visibility of the program.</td>
</tr>
<tr>
<td>Repeatable</td>
<td>Is the program already well known and/or successful on at least one side of the border, or has it been used successfully in another border region outside of Texas-Mexico? A program that is understood and proven to work might be easier to begin in a new location.</td>
</tr>
<tr>
<td>Implementable</td>
<td>Does the program require a state or federal legislative change in order to be seriously considered? Laws and policies can be changed, but doing so can take time.</td>
</tr>
<tr>
<td>Desirable</td>
<td>Is there a state or federal law or policy in the U.S. or Mexico that requires some component of this program to be undertaken—for example, is it required by Texas law or by the U.S.-Mexico-Canada Agreement? A program that is mandated has additional impetus for success.</td>
</tr>
<tr>
<td>Achievable</td>
<td>Does a single agency or a small number of agencies have the authority to carry out at least some steps of implementation? Would action require many agencies to make progress? While consensus can certainly be garnered, it could require a longer timeframe.</td>
</tr>
<tr>
<td>Challenging</td>
<td>Does the program require installing or testing a new technology? New technology can be an innovative component of a program, but can also add cost and complexity, especially if the technology is new.</td>
</tr>
<tr>
<td>Affordable</td>
<td>Is the program likely to be very costly or to need to be phased over multiple budget years? The larger the cost, the longer it might take to roll out the program.</td>
</tr>
</tbody>
</table>
Programs were assigned a timeframe by assessing all of the criteria as clearly as possible. For example:

- Programs determined to clearly meet the components of the first six criteria - clear, compelling, integrated, repeatable, implementable, and desirable - were placed in the short or medium timeframe.
- Programs that met the first six criteria and were also more easily achievable because they did not require a large number of agencies to implement were more likely short term.
- Programs that met most of the criteria and were either lower in cost or included in an existing plan or budget were considered short term, while programs that met most of the criteria but were costly were placed in the medium term.
- Programs where three or more of the criteria could not be clearly determined to be met were placed in the long term category.

The placement of programs by timeframe was intended solely as a guide for decision-makers and stakeholders to determine programs that could potentially be underway in a shorter or longer period. Particular circumstances at the time a program is under review could change dramatically.

8.6.2 Process to Determine Timeframe for Project Strategies

The timeline for projects is also included in Chapter 11. Projects that were on an existing plan and/or had identified funding were relatively straightforward. Longer term and less well-defined projects were not as simple to allocate.

For projects identified in available plans and studies, short-1 to 4 years or 2021–2024, medium-5 to 10 years or 2025–2030, and long-term–11 or more years or 2031–2050, timeframes were determined based on the project description and schedule identified within the plan. Projects included in a five-year plan were placed in the short term category. Projects in long-range plans were included in the timeframe identified in the long-range plan.

Projects identified by stakeholders through discussions, interviews, and workshops conducted in support of the BTMP planning process were also included in the Implementation Plan. Stakeholder input was used to identify timeframes for that set of projects. Knowledgeable participants form local and regional governments in the U.S. and Mexico, as well as TxDOT district engineers from the border region, provided information.

Each of these available plans and studies and stakeholder projects were cross checked with the latest 4-year Statewide Transportation Improvement Program (STIP) and latest 10-year TxDOT Unified Transportation Program to confirm the timeframes.

Projects identified by stakeholders and/or through the BTMP needs analysis process that were in very early stage development, had started feasibility analysis, or are in early project delivery/implementation phases—alternatives analysis, conceptual engineering, environmental—were all allocated to the long-term timeframe.

The timeframe for projects represents a snapshot in time. Projects may move up in priority, or budget issues can stretch the timeline for others.
8.7 Summary of Identification and Evaluation of Strategies

The strategies identified and evaluated in the BTMP to address the current and future needs can be categorized into policies, programs, and projects. The process to develop these strategies included an extensive literature review and stakeholder input to identify specific policies, programs, and projects that align with both the BTMP goals described in Chapter 2 and the issues and needs presented in Chapter 5.

The framework to evaluate strategies is a transparent process that relies on leveraging the expertise of Texas-Mexico border stakeholders as well as the data collected and analyzed through the development of the BTMP.

The evaluation process presented in this chapter categorizes programs and projects into high, medium, and low impact based on their contribution to achieving the BTMP goals and their alignment with the issues and needs. Programs and projects were evaluated according to specific criteria intended to identify their effectiveness in advancing the BTMP goals. The criteria were assigned points based on the strategy’s impact on goals: high, medium, or low. The categorization of programs and projects into the three impact categories provides the basis for developing the BTMP recommendations in Chapter 10.

This chapter also introduced the criteria to assign programs and projects into short, medium, and long term implementation timeframes. Chapter 11 concludes the BTMP with the Implementation Plan, which provides the estimated timeframe that the recommended programs and projects can be underway.

The next chapter, Chapter 9, describes the binational stakeholder engagement, public outreach, and activities that supported the development of the BTMP.
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Chapter 9  Stakeholder Engagement

This chapter outlines the extensive binational stakeholder engagement, public outreach, and activities that supported and guided the development of the Texas-Mexico Border Transportation Master Plan (BTMP). A robust binational and bilingual engagement and outreach was performed in many different formats to provide opportunities for input and feedback for all stakeholders in the three Texas-Mexico border regions—El Paso/Santa Teresa/Chihuahua, Laredo/Coahuila/Nuevo León/Tamaulipas, and Rio Grande Valley/Tamaulipas.

Binational stakeholder input shaped every aspect of the BTMP.

The Texas-Mexico border is a vibrant cultural and economic region that spans 1,254 miles and is home to 7.4 million people. It is a vital North American gateway of trade and commerce that has experienced rapid population growth, job creation, and increasing demand on the transportation system. To understand the true story of the region and to develop a plan that represented all users of the Texas-Mexico border, the Texas Department of Transportation developed a transparent and inclusive binational stakeholder engagement program.

A proactive bilingual engagement process provided opportunities to gather feedback from people who live and work in the region, as well as from those impacted by the border from a regional, state, and national perspective.

Comprehensive strategies were used to reach a broad group of binational stakeholders along the Texas-Mexico border region and beyond. These strategies were used to inform and validate the data-driven analysis conducted as part of the BTMP.

The BTMP stakeholder engagement strategies facilitated binational coordination and collaboration between Texas and Mexico to identify transportation issues, needs, challenges, opportunities, and strategies of moving people and goods across the border, the border region, and beyond.

A robust stakeholder engagement framework allowed an opportunity for a broad range of stakeholders to contribute to the plan. This chapter outlines the extensive binational stakeholder engagement program that supported and guided every aspect of the development of the BTMP. Four goals guided this program:

1. Facilitate stakeholder and public understanding of the BTMP and their role in the development process.
2. Identify cross-border needs, challenges, and opportunities that could be addressed through the BTMP.
3. Promote cooperation and collaboration between public and private stakeholders on both sides of the border.
4. Verify BTMP compatibility with other long-term planning efforts in Texas and Mexico.
To meet these goals, TxDOT created new stakeholder committees, as well as leveraged several stakeholder bodies that were already in existence including the Border Trade Advisory Committee (BTAC), the United States–Mexico Joint Working Committee on Transportation Planning (JWC), and the Binational Bridges and Border Crossings Group (BBBXG).

New committees established for the BTMP include three Binational Regional Steering Committees (BNRSCs), one for each region—El Paso/Santa Teresa/Chihuahua, Laredo/Coahuila/Nuevo León/Tamaulipas, and Rio Grande Valley/Tamaulipas. Each group consisted of more than 100 members who represented public and private sector stakeholders, and leaders from local, regional, state, and federal governments of both countries.

A concerted effort was taken to deliver bilingual engagement in the border region throughout the BTMP development process, as shown in Figure 9.0-1. Ten communities in the Texas-Mexico border region hosted at least one BNRSC meeting, stakeholder workshop, or public meeting: these were El Paso, Eagle Pass, Laredo, Mission, McAllen, Pharr, and Brownsville in the U.S., and Ciudad Juárez, Nuevo Laredo, and Reynosa in Mexico. TxDOT also visited multiple border crossings to gain first-hand knowledge of the uniqueness of each bridge, and to hear the perspectives from local bridge owners, U.S. Customs and Border Protection (CBP), and Servicio de Administración Tributaria (SAT) staff.

To fully engage Mexican stakeholders, TxDOT worked with a stakeholder liaison who lived in Mexico and facilitated binational engagement with Mexican officials and public and private sector stakeholders at the federal and state level with each of the four bordering Mexican states. In addition to several virtual meetings, TxDOT traveled to Mexico City two times to meet with government, agency, and industry leaders, and met with the Mexican ambassador to the U.S. two times in Washington D.C. during the BTMP development.

Nearly 2,800 individuals from the U.S. and Mexico were involved in the stakeholder engagement process.

---

1 TxDOT intended on visiting all 28 Texas-Mexico border crossings and the Santa Teresa border crossing prior to the completion of the study; however, due to COVID-19 travel restrictions, only six of the visits took place.
An illustration of stakeholder type, as well as country affiliation, is shown in Figure 9.0-2.

Figure 9.0-2. Total Number of U.S. and Mexico Stakeholders Involved in the BTMP

Two significant international and global events impacted the stakeholder engagement effort for this plan. The first was the ratification of the U.S.-Mexico-Canada Agreement (USMCA), which gave binational collaboration even more importance to the BTMP development. The second was the global COVID-19 pandemic, which halted cross-border travel between U.S. and Mexico and eliminated site visits and face-to-face stakeholder meetings. TxDOT relied on virtual meetings for most of 2020 and saw even greater numbers of participation from U.S. and Mexican stakeholders because of this accessible outreach method.

9.1 Stakeholder Engagement and Public Involvement Framework

A comprehensive Texas-Mexico stakeholder engagement framework provided a far-reaching opportunity for both nations to participate in the BTMP development process.

The organization and overarching framework shows how TxDOT worked together with various committees and groups in a collaborative way to get input and to develop binational consensus during each phase of BTMP development, as shown in Figure 9.1-1.
This engagement network allowed for a complex, inclusive, and transparent system of interaction, input, and decision-making. All groups shown in this diagram were engaged in a collaborative way to get their input and to develop Texas-Mexico consensus during each phase of the BTMP, as further explained below.
9.2 Stakeholder Engagement Outreach

The development of the BTMP was data-driven and relied on extensive consultation, engagement, and consensus-building with binational public and private stakeholders.

TxDOT served as a facilitator between all entities and leveraged an internal Border Task Force to help deploy the stakeholder engagement program, incorporate local priorities and planning initiatives, and support the overall development of the BTMP. This group is made up of leadership from each of the three TxDOT border districts—El Paso, Laredo, and Pharr—and other TxDOT divisions, including Rail, Maritime, and State Legislative Affairs. The TxDOT internal Border Task Force was in place prior to the BTMP and will contribute to the implementation of the plan recommendations.

TxDOT also collaborated with U.S. and Mexico federal and state agencies and committees on the BTMP, including the JWC and BBBXG. These two binational groups provide an ongoing framework for the U.S.-Mexico border transportation planning process and guide border transportation management and investment decisions. An overview of each group is provided in Table 9.2-1.

| Table 9.2-1. Existing Binational Committees |
|-----------------|-----------------|
| **JWC** | **BBBXG** |
| **Purpose** | To foster collaboration and cooperation between the U.S. and Mexico with regard to land transportation planning and the facilitation of efficient, safe, and economical cross-border movement of people and goods. | To facilitate collaboration and cooperation on operational matters involving existing and proposed international bridges, border crossings, and related infrastructure, as well as exchanges of technical information and policy issues. |
| **Membership** | Federal Highway Administration (FHWA), Secretaría de Comunicaciones y Transportes (SCT), CBP, SAT, Department of State (DOS), Secretaría de Relaciones Exteriores (SRE), General Services Administration (GSA), the four U.S. border state DOTs, and the six Mexican border states | U.S. & Mexican governments, and 10 border states, including California, Arizona, Texas, and New Mexico in the U.S., and Baja California, Sonora, Chihuahua, Coahuila, Nuevo León, and Tamaulipas in Mexico |
| **Role** | This committee was instrumental in the BTMP scope development. TxDOT also presented BTMP updates at several meetings and received their feedback. | TxDOT presented BTMP updates at several meetings and received feedback from the group. |

In 2018 when the BTMP development process began, bilingual stakeholder engagement meetings took place in both the U.S. and Mexico to foster continuous and increased interest and participation from individuals throughout the planning process. Nearly 2,800 individuals—1,758 from the U.S. and 1,021 from Mexico—were engaged at 160 different meetings, interviews, speaking engagements, and events, as shown in Figure 9.2-1.
### Figure 9.2-1. BTMP Stakeholder Outreach during the Plan Development Process

#### TEXAS-MEXICO BORDER TRANSPORTATION MASTER PLAN OUTREACH SCHEDULE

<table>
<thead>
<tr>
<th>PHASE 1</th>
<th>PHASE 2</th>
<th>PHASE 3</th>
<th>PHASE 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>October</td>
<td>December</td>
<td>November</td>
<td>December</td>
</tr>
<tr>
<td>2018</td>
<td>2019</td>
<td>2020</td>
<td>2021</td>
</tr>
</tbody>
</table>

**BORDER TRADE ADVISORY COMMITTEE MEETING**

- **RIO GRANDE VALLEY/TAMAULIPAS**
- **LAREDO/COAHUILA/NUEVO LEON/TAMAULIPAS**
- **EL PASO/SANTA TERESA/CHIHUAHUA**

**BINATIONAL REGIONAL STEERING COMMITTEE MEETINGS**

**BINATIONAL COORDINATION**

**PRIVATE SECTOR WORKSHOPS/STAKEHOLDER INTERVIEWS**

**PUBLIC MEETINGS**

**TXDOT INTERNAL BORDER TASK FORCE**

**U.S. & MEXICO BINATIONAL FEDERAL & STATE AGENCIES & COMMITTEES**

**OUTREACH, EDUCATION, & COMMUNICATION MATERIALS**

<table>
<thead>
<tr>
<th>BROCHURE</th>
<th>FACT SHEET</th>
<th>NEWSLETTER</th>
<th>SURVEYS</th>
<th>WHITE PAPER</th>
<th>CONFERENCES</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tr>
</tbody>
</table>
Since its creation in 2001, BTAC has served as a forum for agency transportation decisions affecting trade and the movement of freight at the Texas border. BTAC’s purpose is to aide TxDOT in defining and developing a strategy to address the highest priority border trade transportation challenges, and to make recommendations to the Texas Transportation Commission and the Governor.

BTAC is chaired by the Texas Secretary of State, who serves as the state’s Border Commerce Coordinator. Membership is comprised of more than 30 public officials and multimodal transportation stakeholders, including border crossing owners and operators, ports/terminals, motor carriers, railroads, and other transportation freight stakeholders with perspective and vested interest in border trade and transportation issues.

BTAC played a central and continued role in guiding the development of the BTMP, shaping the scope, identifying issues and challenges, assisting with data collection, reaching stakeholders, providing input on technical analysis, and vetting strategies and recommendations. BTAC provided input on all draft and final deliverables, recommended the final BTMP to the Texas Transportation Commission for adoption, and will assist TxDOT in the implementation of the plan.

In 2017, BTAC developed the *Texas Border Strategic Transportation Blueprint (2017)* which set the foundation for the BTMP. The Blueprint provided five recommendations to enhance border and trade relations with Mexico, including:

1. **Recommendation 1**: Establish a Texas-Mexico Trade Transportation Task Force
2. **Recommendation 2**: Develop a Texas-Mexico Trade Lanes Program
3. **Recommendation 3**: Develop a Public Awareness and Education Program
4. **Recommendation 4**: Implement Technology and Innovative Binational Border Strategies
5. **Recommendation 5**: Foster Private-Sector Involvement

Each of these recommendations provided a step-by-step process of how to complete the task and articulated the expected outcomes of each action. Recommendations 3 and 5 guided the development of the *Stakeholder and Public Engagement Plan* for the BTMP.
BTAC’s Roles and Responsibilities in the BTMP Development

The committee coordinated closely with TxDOT, BNRSCs, and federal, state, and local agencies to ensure BTMP recommendations were consistent with regional and statewide priorities. BTAC was instrumental on providing guidance throughout BTMP development and decision points. Key activities included:

- Provided input on the BTMP scope development
- Provided input on the BTMP goals and objectives
- Assisted with binational public and stakeholder outreach
- Identified issues, needs, and challenges
- Provided input and guidance on data collection and technical analysis
- Assisted in the development of policies and programs
- Assisted in the development of project recommendations
- Provided input on the Implementation Plan
- Recommended the final BTMP to the Texas Transportation Commission for consideration and adoption

Summary of BTAC Activities

There have been 22 BTAC meetings; 12 of those meetings occurred during the BTMP plan development process. Table 9.2-2 provides a summary of dates, locations, and topics of those meetings.

Table 9.2-2. BTAC Engagement Summary during the BTMP Development Process

<table>
<thead>
<tr>
<th>BTMP Development Phase*</th>
<th>BTAC Meeting Dates, Locations and Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data Collection</td>
<td>December 12, 2018 – Austin</td>
</tr>
<tr>
<td></td>
<td>▪ BTMP kick-off and overview of guiding principles</td>
</tr>
<tr>
<td></td>
<td>▪ Reviewed BTMP regional area of impact, phases, and milestones</td>
</tr>
<tr>
<td></td>
<td>▪ Reviewed BNRSC roles, responsibilities, composition, and criteria</td>
</tr>
<tr>
<td></td>
<td>▪ Overview of stakeholder engagement strategy</td>
</tr>
<tr>
<td></td>
<td>▪ Reviewed and discussed development of BTMP goals</td>
</tr>
<tr>
<td>Multimodal Corridor Designation and Needs Assessment</td>
<td>May 21, 2019 – Austin</td>
</tr>
<tr>
<td></td>
<td>▪ Refined BTMP goals, objectives, vision, and mission</td>
</tr>
<tr>
<td></td>
<td>▪ Overview of data collection, methodology, inventory, and analysis</td>
</tr>
<tr>
<td></td>
<td>▪ Reviewed corridor designation process and needs assessment strategy</td>
</tr>
<tr>
<td></td>
<td>October 17, 2019 – Austin</td>
</tr>
<tr>
<td></td>
<td>▪ Reviewed draft final BTMP goals and objectives</td>
</tr>
<tr>
<td></td>
<td>▪ Discussed analysis of border-related data findings and current conditions</td>
</tr>
<tr>
<td></td>
<td>▪ Defined five areas of analysis (spheres)</td>
</tr>
<tr>
<td></td>
<td>▪ Reviewed Texas-Mexico multimodal corridor identification process and designation criteria</td>
</tr>
<tr>
<td></td>
<td>▪ Discussed needs assessment approach for corridors and border crossings</td>
</tr>
<tr>
<td>BTMP Development Phase*</td>
<td>BTAC Meeting Dates, Locations and Topics</td>
</tr>
<tr>
<td>------------------------</td>
<td>----------------------------------------</td>
</tr>
<tr>
<td><strong>Forecast and Economic Analysis</strong></td>
<td><strong>January 21, 2020 – Austin</strong>&lt;br&gt;▪ Discussed Texas-Mexico multimodal corridor identification, modal profiles, and needs assessment&lt;br&gt;▪ Primer on economic profiles at the POE level and cross-border commodity flows&lt;br&gt;▪ Introduction to future forecasting and economic analysis plans</td>
</tr>
<tr>
<td></td>
<td><strong>April 16, 2020 – Virtual meeting</strong>&lt;br&gt;▪ Reviewed and discussed draft plan—Chapter 1: Introduction; Chapter 2: Goals, Objectives, and Institutions&lt;br&gt;▪ Reviewed and discussed BTMP chapter outlines—Chapter 3: Texas-Mexico Border: Past and Present; Chapter 4: Texas-Mexico Multimodal Transportation Network Designation; Chapter 5: Current and Future Needs Assessment&lt;br&gt;▪ Discussed BTMP preliminary forecasting and economic analysis</td>
</tr>
<tr>
<td><strong>Identification of Strategies and Recommendations</strong></td>
<td><strong>June 17, 2020 – Virtual meeting</strong>&lt;br&gt;▪ Discussed chapter refinements—Chapter 1: Introduction; Chapter 2: Goals, Objectives, and Institutions&lt;br&gt;▪ Reviewed and discussed draft report—Chapter 3: Texas-Mexico Border: Past and Present; Chapter 4: Binational Multimodal Transportation Network Designation; Chapter 6: Future Forecasts for the Texas-Mexico Border Region; Chapter 7: Economic Importance of the Border</td>
</tr>
<tr>
<td></td>
<td><strong>July 9, 2020 – Virtual meeting</strong>&lt;br&gt;▪ Reviewed and discussed draft report—Chapter 5: Current and Future Needs Assessment; Chapter 6: Future Forecasts for the Texas-Mexico Border Region; Chapter 8: Process to Identify and Evaluate Strategies to Address Current and Future Needs</td>
</tr>
<tr>
<td></td>
<td><strong>August 6, 2020 – Virtual meeting</strong>&lt;br&gt;▪ Reviewed and discussed draft report—Chapter 7: Economic Importance of the Border; Chapter 8: Process to Identify and Evaluate Strategies to Address Current and Future Needs; Chapter 10: Recommendations; Chapter 11: Implementation Plan</td>
</tr>
<tr>
<td></td>
<td><strong>September 10, 2020 – Virtual meeting</strong>&lt;br&gt;▪ Reviewed and discussed draft report—Chapter 8: Process to Identify and Evaluate Strategies to Address Current and Future Needs; Chapter 9: Stakeholder Engagement; Chapter 10: Recommendations; Chapter 11: Implementation Plan</td>
</tr>
<tr>
<td></td>
<td><strong>October 22, 2020 – Virtual meeting</strong>&lt;br&gt;▪ Discussed Mexico’s Project, Program and Policy priorities&lt;br&gt;▪ Reviewed and discussed draft report—Chapter 11: Implementation Plan; and draft final BTMP plan&lt;br&gt;▪ Reviewed and discussed preliminary outline of the executive summary</td>
</tr>
<tr>
<td><strong>Approvals</strong></td>
<td><strong>November 12, 2020 – Virtual meeting</strong>&lt;br&gt;▪ Reviewed and discussed draft final BTMP plan, executive summary, and Texas Transportation Commission presentation&lt;br&gt;▪ <strong>December 3, 2020 – Virtual meeting</strong>&lt;br&gt;▪ Reviewed and discussed executive summary and Texas Transportation Commission presentation</td>
</tr>
</tbody>
</table>

* BTAC has been working on border transportation initiatives since 2001; this table reflects BTAC meetings held during the BTMP development process.
9.2.2 Binational Regional Steering Committees

Border master plans for the three Texas-Mexico border regions were conducted and published in 2012 and 2013. Each of these plans recommended greater efforts to engage Mexican stakeholders in future planning efforts to capitalize on the long history of economic, cultural, and social relations between U.S. and Mexican stakeholders. Three BNRSCs were established to provide input and guide the development of the BTMP.

The purpose of BNRSCs was to provide valuable regional information and input throughout the development of the BTMP. Members served as regional champions of the plan and communicated the purpose and need of the BTMP to other non-members.

BNRSCs were led by co-chairs from Texas and Mexico. Each committee was co-chaired by a prominent Mexican and U.S. leader from each region, which helped to foster binational equality in the process and elevated the gravity of the work. Binational chairs of each BNRSC had the opportunity to collaborate with one another, as well as with BTAC as needed, through plan development. To develop an inclusive membership roster for the committees, considerations were made to include public and private sector stakeholders and representatives from local, regional, state, and federal governments of both countries, as shown in Table 9.2-3.

<table>
<thead>
<tr>
<th>Stakeholder Category</th>
<th>Selection Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Binational Federal and State Agencies</td>
<td>U.S. and Mexico individuals or organizations who focus on the operation, planning, and/or facilitation of efficient and safe cross-border transportation movement and infrastructure were identified and included in the planning process.</td>
</tr>
<tr>
<td>Local, Private Stakeholder, and Public Groups</td>
<td>U.S. and Mexico individuals or organizations who could provide local feedback, input, and perspective representative of those who use the border crossings and understand the border region were identified and included in the planning process.</td>
</tr>
<tr>
<td>Tribal Governments</td>
<td>Indigenous groups, such as the Ysleta del Sur Pueblo and Kickapoo Traditional Tribe of Texas, who are present in the border region were identified and included in the planning process.</td>
</tr>
</tbody>
</table>

Initial BNRSC membership lists were provided by staff at the TxDOT El Paso, Laredo, and Pharr Districts. These lists were included into one collective database, and then reviewed by the project...
team to identify additional individuals and organizations who represented users, operators, or regulators of the border. In addition, the project team utilized a Mexican stakeholder liaison who lives in Mexico and understands the intricacies of the Mexican government to help develop the stakeholder list for Mexico participants. Regional breakouts and total membership of each BNRSC group are shown in Table 9.2.

<table>
<thead>
<tr>
<th>Regional BNRSC</th>
<th>Membership</th>
<th>Membership</th>
<th>Membership</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>U.S.</td>
<td>Mexico</td>
<td>Total</td>
</tr>
<tr>
<td>El Paso/Santa Teresa/Chihuahua</td>
<td>46</td>
<td>59</td>
<td>105</td>
</tr>
<tr>
<td>Laredo/Coahuila/Nuevo León/Tamaulipas</td>
<td>51</td>
<td>57</td>
<td>108</td>
</tr>
<tr>
<td>Rio Grande Valley/ Tamaulipas</td>
<td>68</td>
<td>43</td>
<td>111</td>
</tr>
</tbody>
</table>

**BNRSC Roles and Responsibilities in BTMP Development**

BNRSC members served as regional champions and active participants in the planning process. BNRSC members also:

- Provided input on the BTMP goals and objectives
- Contributed to the development of the BTMP
- Assisted with public and stakeholder outreach
- Identified issues and needs
- Provided data and other information
- Provided input on the development of program/project recommendations
- Provided input on the evaluation of programs and projects
- Developed an Implementation Plan for the BTMP

**Summary of BNRSC Activities**

Thirty bilingual BNRSC meetings were held in cities along the border, including: El Paso, Ciudad Juárez (MX), Laredo, Nuevo Laredo (MX), McAllen, Mission, and Reynosa (MX), while the remainder of the meetings were held virtually via WebEx.

Over the course of the BTMP development, the BNRSC meetings had more than 2,000 participants, with 565 participants from Mexico.
and 1,492 participants from the U.S. Table 9.2-4 provides a summary of dates, locations, and topics of BNRSC meetings.

<table>
<thead>
<tr>
<th>BTMP Development Phase</th>
<th>BNRSC Meeting Dates, Locations and Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Data Collection</strong></td>
<td><strong>April 3, 23, &amp; 30, 2019 – Pharr, Laredo, El Paso</strong></td>
</tr>
<tr>
<td></td>
<td>▪ BTMP kick-off and overview</td>
</tr>
<tr>
<td></td>
<td>▪ BNRSC draft roles and responsibilities</td>
</tr>
<tr>
<td></td>
<td>▪ Reviewed draft BTMP goals and objectives</td>
</tr>
<tr>
<td></td>
<td>▪ Overview of data needs, collection, and analysis approach</td>
</tr>
<tr>
<td></td>
<td>▪ Preliminary discussion of issues, challenges and opportunities at the corridor level</td>
</tr>
<tr>
<td><strong>Multimodal Corridor Designation and Needs Assessment</strong></td>
<td><strong>June 3–5, 2019 – Laredo, Mission, El Paso</strong></td>
</tr>
<tr>
<td></td>
<td>▪ Reviewed the identification of initial data analysis and gaps and how to address them</td>
</tr>
<tr>
<td></td>
<td>▪ Discussed proposed methodology to identify multimodal corridors to be studied in more detail (i.e., designated corridors)</td>
</tr>
<tr>
<td></td>
<td>▪ Discussed list of preliminary multimodal corridors presented at BTAC and request feedback on additional corridors</td>
</tr>
<tr>
<td></td>
<td><strong>October 22 &amp; 30, 2019, and November 12, 2019 – Nuevo Laredo, Tamaulipas; Reynosa, Tamaulipas; Ciudad Juárez, Chihuahua</strong></td>
</tr>
<tr>
<td></td>
<td>▪ Discussed and finalized BTMP goals and objectives</td>
</tr>
<tr>
<td></td>
<td>▪ Discussed analysis of border-related data findings and current conditions</td>
</tr>
<tr>
<td></td>
<td>▪ Reviewed Texas-Mexico multimodal corridor identification process and designation criteria</td>
</tr>
<tr>
<td></td>
<td>▪ Discussed needs assessment approach for corridors and border crossings</td>
</tr>
<tr>
<td><strong>Forecast and Economic Analysis</strong></td>
<td><strong>April 21–23, 2020 – Virtual meetings</strong></td>
</tr>
<tr>
<td></td>
<td>▪ Reviewed and discussed draft plan—Chapter 1: Introduction; Chapter 2: Goals, Objectives, and Institutions</td>
</tr>
<tr>
<td></td>
<td>▪ Reviewed and discussed BTMP chapter outlines—Chapter 3: Texas-Mexico Border: Past and Present; Chapter 4: Texas-Mexico Multimodal Transportation Network Designation; Chapter 5: Current and Future Needs Assessment</td>
</tr>
<tr>
<td><strong>Identification of Strategies and Recommendations</strong></td>
<td><strong>June 30–July 2, 2020 – Virtual meetings</strong></td>
</tr>
<tr>
<td></td>
<td>▪ Discussed chapter refinements—Chapter 1: Introduction; Chapter 2: Goals, Objectives, and Institutions</td>
</tr>
<tr>
<td></td>
<td>▪ Reviewed and discussed draft report—Chapter 3: Texas-Mexico Border: Past and Present; Chapter 4: Texas-Mexico Multimodal Transportation Network Designation; Chapter 5: Current and Future Needs Assessment; Chapter 6: Future Forecasts for the Texas-Mexico Border Region; Chapter 7: Economic Importance of the Border</td>
</tr>
<tr>
<td></td>
<td><strong>July 27–29, 2020 – Virtual meetings</strong></td>
</tr>
<tr>
<td></td>
<td>▪ Reviewed and discussed draft report—Chapter 5: Current and Future Needs Assessment; Chapter 6: Future Forecasts for the Texas-Mexico Border Region; Chapter 8: Process to Identify and Evaluate Strategies to Address Current and Future Needs</td>
</tr>
<tr>
<td></td>
<td><strong>August 17–19, 2020 – Virtual meetings</strong></td>
</tr>
<tr>
<td></td>
<td>▪ Reviewed and discussed draft report—Chapter 7: Economic Importance of the Border; Chapter 8: Process to Identify and Evaluate Strategies to Address Current and Future Needs; Chapter 9: Stakeholder Engagement; Chapter 10: Recommendations; Chapter 11: Implementation Plan</td>
</tr>
<tr>
<td></td>
<td><strong>September 21–23, 2020 – Virtual meetings</strong></td>
</tr>
<tr>
<td></td>
<td>▪ Reviewed and discussed draft report—Chapter 8: Process to Identify and Evaluate Strategies to Address Current and Future Needs; Chapter 9: Stakeholder Engagement; Chapter 10: Recommendations; Chapter 11: Implementation Plan</td>
</tr>
</tbody>
</table>
### 9.2.3 Private Sector Stakeholder Workshops/Interviews

#### Workshops

The purpose of the stakeholder workshops was to gather local feedback and perspective representative of those who use the border crossings and understand the border region. Private sector participants included binational economic and business associations, brokers, logistics, export groups, industrial manufacturers, bridge owners, CBP, and quasi-government agencies, such as Metropolitan Planning Organization and/or Regional Mobility Authority staff.

Some workshops were held virtually, while others were held in locations within the three regions to allow additional opportunities to participate. Meeting locations included: El Paso, Laredo, Eagle Pass, McAllen, and Brownsville. In addition, several meetings were held with Mexican private sector stakeholders in Mexico City or over WebEx, and one workshop was held specifically with CBP staff.

#### Interviews

The purpose of the stakeholder interviews was to gather input on existing datasets and the process to acquire them, as well as to solicit guidance on the data collection and analysis methodology. Stakeholders were selected to provide diversity of experiences based on geographic location, type of stakeholder (state, local, private, Texas/Mexico), and participation on BTAC/BNRSC.
Roles and Responsibilities in BTMP Development

Workshops and interviews were held to allow private sector stakeholders opportunities to share industry perspectives and feedback through facilitated discussions and interactive communication tools. Other roles include:

- Provided input on BTMP goals and objectives
- Helped identify issues and needs
- Provided data and other information
- Provided insight regarding economic development and transportation infrastructure
- Provided input on policy, program, and project recommendations

Summary of Stakeholder Activities

Ten stakeholder workshops were held, with three in the El Paso/Santa Teresa/Chihuahua Region, four in the Laredo/Coahuila/Nuevo León/Tamaulipas Region, and three in the Rio Grande Valley/Tamaulipas Region. In total, 582 participants attended a stakeholder workshop—120 participants from Mexico and 462 participants from the U.S.

Also, 284 stakeholder interviews were conducted throughout the development of the BTMP.

Table 9.2-5 provides a summary of dates, locations, and topics of those workshops and interviews.

<table>
<thead>
<tr>
<th>BTMP Development Phase</th>
<th>Stakeholder Workshop/Interview Dates, Locations and Topics</th>
</tr>
</thead>
</table>
| Data Collection        | Workshops: April 2, 23, 24, & 30, 2019 – Pharr, Laredo, Eagle Pass, El Paso  
  ▪ BTMP kick-off and overview  
  ▪ Reviewed draft BTMP goals and objectives  
  ▪ Overview of data needs, collection, and analysis approach  
  ▪ Preliminary discussion of issues, challenges and opportunities at the corridor level |
| Multimodal Corridor Designation and Needs Assessment | Interviews: August 2019  
  ▪ Available datasets and data acquisition process  
  ▪ Data collection and analysis methodology |
| Forecast and Economic Analysis | Workshops: November 13, 2019, and December 3 & 9, 2019 – El Paso-Upper Valley, Laredo, Brownsville  
  ▪ BTMP overview and summary of stakeholder engagement activities  
  ▪ Reviewed final BTMP goals and objectives  
  ▪ Discussed analysis of border-related data findings and current conditions  
  ▪ Reviewed Texas-Mexico multimodal corridor identification process and designation criteria  
  ▪ Overview of trends at the corridor level and needs analysis |
|                         | Interviews: February/March 2020  
  ▪ Border story perspectives  
  ▪ Historical trends and issues |
### BTMP Development Phase and Stakeholder Workshop/Interview Dates, Locations and Topics

<table>
<thead>
<tr>
<th>Phase</th>
<th>Stakeholder Workshop/Interview Dates, Locations and Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identification of Strategies and</td>
<td><strong>Workshops: July 27–29, 2020 – Virtual meetings</strong>&lt;br&gt;Discussed performance-related BTMP goals  &lt;br&gt;Discussed binational cross-cutting themes  &lt;br&gt;Discussed process-related BTMP goal</td>
</tr>
<tr>
<td>Recommendations</td>
<td><strong>Interviews: August/September 2020</strong>&lt;br&gt;Policy/program recommendations</td>
</tr>
</tbody>
</table>

### 9.2.4 Public Meetings

Public meetings were held at major milestones and key decision points throughout the border region to gather input on issues, needs, challenges, and opportunities to maintain a multimodal cross-border transportation network. Numerous tactics were used to gather and collate input including interactive maps to identify issues or missing information, and live-polling tools to incorporate real-time feedback into the BTMP.

### Roles and Responsibilities in BTMP Development

- Participated in the development of the BTMP
- Provided input on issues, needs, challenges, and opportunities
- Gained awareness of cross-border trade and transportation issues along the border
- Provided comments on the draft BTMP

![Public meeting in Laredo, Texas. April 2019.](image1)

![Public meeting in El Paso, Texas. November 2019.](image2)
Summary of Public Meeting Activities

A total of 587 individuals—91 from Mexico and 496 from the U.S.—attended nine public meetings held across the Texas-Mexico border region and virtually. The public meetings were held in the U.S.: two were held in El Paso, two were held in Laredo, one was held in McAllen, and one was held in Brownsville. Three additional public meetings were held virtually to present the final draft BTMP with the public so they could share their feedback.

Table 9.2-6 provides a summary of dates, locations, and topics of those meetings.

<table>
<thead>
<tr>
<th>BTMP Development Phase</th>
<th>Public Meeting Dates, Locations and Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data Collection</td>
<td>April 9, 22 &amp; 29, 2019 – Pharr, Laredo, El Paso</td>
</tr>
<tr>
<td></td>
<td>BTMP kick-off and overview</td>
</tr>
<tr>
<td></td>
<td>Reviewed draft BTMP goals and objectives</td>
</tr>
<tr>
<td></td>
<td>Preliminary discussion of local border needs, challenges, and opportunities</td>
</tr>
<tr>
<td>Forecast and Economic Analysis</td>
<td>November 12, 2019, and December 3 &amp; 9, 2019 – El Paso, Laredo, Brownsville</td>
</tr>
<tr>
<td></td>
<td>BTMP overview and summary of stakeholder engagement activities</td>
</tr>
<tr>
<td></td>
<td>Reviewed final BTMP goals and objectives</td>
</tr>
<tr>
<td></td>
<td>Overview of border-related data findings and current conditions</td>
</tr>
<tr>
<td></td>
<td>Reviewed Texas-Mexico multimodal corridor identification process and designation criteria</td>
</tr>
<tr>
<td></td>
<td>Overview of trends at the corridor level and needs analysis</td>
</tr>
<tr>
<td>Identification of Strategies and Recommendations</td>
<td>February 9-11, 2021 – Virtual public meetings</td>
</tr>
<tr>
<td></td>
<td>Public review and comment period on the draft BTMP report</td>
</tr>
</tbody>
</table>

9.2.5 U.S. & Mexico Binational Coordination

U.S. and Mexico coordination focused on building and strengthening relationships between the countries. The purpose was to enable greater, long-standing collaboration on facilitating the efficient, safe, and economical cross-border movement of people and goods and transportation infrastructure investments. It also allowed for the exchange of information and data relevant to the BTMP.

Underpinning all of the binational coordination was a series of monthly conference calls hosted by TxDOT with SCT and FHWA, which enabled them to effectively direct the BTMP planning process and provide cross-border consistency in planning between both countries.

Roles and Responsibilities in BTMP Development

U.S. and Mexican stakeholders played a critical role in the BTMP development, such as:

- Provided binational data
Assisted in understanding institutions and frameworks
- Helped identify binational issues and needs
- Built binational consensus on transportation solutions
- Reviewed and commented on recommendations
- Provided input into BTMP implementation

**Summary of Binational Activities**

**Mexican Engagement**

Regular engagement with Mexican officials—such as SRE, SCT, SAT, and local officials in the four border states—was performed to keep them updated on the status of the BTMP, as well as meeting with other binational stakeholders including:

- National Agricultural Council (Consejo Nacional Agropecuario, CNA) in Mexico City
- Confederation of Industrial Chambers (Confederación de Cámaras Industriales, CONCAMIN) in Mexico City
- Home Appliances Cluster (Cluster Electrodomésticos, CLELAC) in Monterrey, Nuevo León
- Energy Cluster (Cluster Energéticos) in Monterrey, Nuevo León
- Chamber of Transformation Industry (Cámara de la Industria de Transformación) in Monterrey, Nuevo León
- Officials in the four Mexican border states
- Two trips to Mexico City to meet with government, agency, and industry leaders, including:
  - Federal agencies: Office of President, SRE, SCT, Mexico’s Infrastructure Bank (BANOBRAS), and Caminos y Puentes Federales de Ingreso (CAPUFE)
Federal representatives and senators from the Border Affairs and Transportation Commissions

- Representatives from Mexican border states: Chihuahua, Coahuila, Nuevo León, and Tamaulipas
- Private sector: trucking associations, logistic companies, and Mexican subject matter experts in energy

- Two meetings with the Mexican ambassador to the U.S. in Washington D.C.
- Surveyed 37 Mexican companies for input on the economic implications of the border and wait times at the border
- Mexican trade events and conferences, such as the Conferencia Nacional de Gobernadores (CONAGO), COMCE conference in Monterrey, AMIVTAC conference in Merida, and Mexican Agricultural Council (CNA) online conference
- Binational news conferences in three Mexican cities—Nuevo Laredo, Tamaulipas; Reynosa, Tamaulipas; and Ciudad Juárez, Chihuahua

**U.S. Engagement**

- The Texas Secretary of State was engaged in the BTMP and chaired the BTAC
- TxDOT and BNRSCs coordinated with the New Mexico Department of Transportation
- TxDOT engaged GSA
- Representatives from CBP served on each BNRSC; a special work session was held with CBP that included representatives from the Texas border, as well as the Canadian border, to capitalize on lessons learned from CBP work in both the northern and southern border regions

**9.3 Outreach, Education, and Communication Materials**

The stakeholder and public engagement approach was multi-faceted and designed to support the exchange of information, the gathering of data, and the analysis of decision-making criteria for the BTMP.

Stakeholders were kept informed on the BTMP development process with easily accessible, meaningful, and accurate information made available through email updates, flyers, website postings, phone calls, and presentations. All materials were provided in both English and Spanish. The project team coordinated with TxDOT leaders at district and division levels, as well as Public Information Officers (PIOs), to disseminate information. A summary of these activities is provided below.
Online Tools
Electronic surveys, live polling, and interactive maps were used to gather targeted input from binational stakeholders on specific project-related topics. These tools were used regularly throughout the development of the BTMP, including at almost all BTAC, BNRSC, stakeholder workshops, and public meetings.

Speaking Engagements
Project team members participated in multiple speaking engagements with trade and civic organizations—at the local and regional level—to discuss the BTMP with interested audiences, to listen to and engage with stakeholders, and to gather data relevant to the BTMP development process.

Project Webpage
A project webpage (www.txdot.gov/inside-txdot/projects/studies/statewide/040219.html) was maintained to share current BTMP information, including plan development, fact sheets, upcoming meetings, contact information, and trade and border statistics.

Fact Sheets
Five fact sheets were developed that focused on issues related to cross-border trade, infrastructure, and the movement of people and goods along the Texas-Mexico border, as well as provided relevant regional maps, charts, and graphics. The fact sheets were shared at public meetings, workshops, and were posted online.

Newsletters
An electronic newsletter, Border Connections, was developed to highlight relevant information on the status of the BTMP, including updates on the cross-border movement of people and goods, the planning process, progress achieved, and insight into key issues and emerging priorities.
Media Outreach

The project team collaborated with TxDOT PIOs and other partner agencies to issue meeting notices, publish press releases and communicate with local media outlets. Social media was also used to share updates throughout the development of the BTMP. Twitter updates were shared by the three regional PIO accounts (@TxDOTELP, @TxDOTLaredo, @TxDOTPharr) and Facebook updates were posted on TxDOT’s main page (www.facebook.com/TxDOT).

9.4 Participation Results

The final count of stakeholder participation and attendance at BTMP meetings and events throughout the development of the BTMP has exceeded that experienced on the previous regional border master plans, amassing 5,675 total meeting participants—1,543 individuals from Mexico and 4,132 individuals from the U.S.—as shown in Figure 9.4-1. Many of the regional meetings were attended by the same stakeholders, proving their dedication and commitment to the BTMP planning process. The final database included 2,779 individuals.

Industry stakeholders and state and federal agency input for the BTMP extended far beyond the project boundaries and deeper into both countries.
Figure 9.4-2 shows a geographic representation of all the people who contributed to the BTMP in some way—the darker the color, the greater the number of people who were involved from that state or county. This map demonstrates how vital the border region is to the broader nations of the U.S. and Mexico, well beyond the physical Texas-Mexico border region.
9.5 Summary of Stakeholder Engagement

A comprehensive and inclusive outreach and engagement was vital to the BTMP planning process. This engagement will also play a key role in the future implementation of all programs, policies, and projects identified in Chapter 11 of the BTMP.

The binational stakeholder outreach program conducted for this plan was unprecedented, engaging nearly 2,800 stakeholders in both the U.S. and Mexico and interacting with them more than 28,000 times throughout the development of the BTMP. Comprehensive outreach was performed in many different formats to stakeholders in the three border regions—El Paso/Santa Teresa/Chihuahua, Laredo/Coahuila/Nuevo León/Tamaulipas, and Rio Grande Valley/Tamaulipas—to help shape the BTMP.

The relationships between stakeholders along the Texas-Mexico border and beyond are dynamic and ever-changing, supporting the commercial, cultural, and educational ties between the U.S. and Mexico. As the movement of people and trade between Texas and Mexico grows, it is important to maintain the high levels of binational coordination and collaboration that was fostered throughout the BTMP development process. The next chapter outlines the recommendations identified throughout the evaluation of needs and strategies.
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Chapter 10  Recommendations

The Texas-Mexico border region is a multidimensional, layered and dynamic area where the continued growth of population, trade, and travel demand has outpaced investments all along the border. The Texas-Mexico border is North America’s busiest trade gateway and has been integral to the economic growth of the United States and Mexico. Since the ratification of the North American Free Trade Agreement (NAFTA), the movement of goods across the Texas-Mexico border has more than tripled, from $111 billion in 1994 to $451 billion in 2019.\(^1\) By 2050, the value of trade is expected to approach $1.5 trillion, in 2019 dollars, with an additional 26.1 million people crossing the border annually over 2019 figures.

To address the current and future needs anticipated from the forecasted growth at the border crossings and in connecting corridors, Texas-Mexico decision-makers are tasked with coordinating planning and funding improvements to the infrastructure system and its operations.

The purpose of this chapter is to provide the results of the identification and evaluation of strategies that address the current and future needs of the Texas-Mexico border region.

While rapid trade growth has provided a thriving economic environment, numerous issues continue to affect the efficient movement of people and goods through the border. As described in Chapter 5, these issues include:

- Increasing border crossing times due to capacity and operational constraints
- Safety concerns, particularly in urban areas and within the last mile of the border
- Aging infrastructure conditions and uneven maintenance to address them
- Shortfalls in connectivity between modes, between Texas (U.S.) and Mexico, and including between border crossings
- Inadequate rail crossing capacity and many highway-rail at-grade crossings
- Pedestrian and bicycle connectivity and safety
- Challenges with deploying and integrating new technologies that could improve efficiency
- A lack of redundancy and uneven processes that impact cross-border resiliency
- Inconsistent binational coordination and communication
- Incomplete data for system monitoring and improvement

Addressing these issues is critical to sustaining the movement of people and goods and the continued economic prosperity of the Texas-Mexico border region, as well as the U.S. and Mexico.

\(^1\) Includes trade through the border crossing at Santa Teresa, NM.
The strategies identified in this chapter were developed based on the needs assessment (presented in Chapter 5), combined with the 2050 forecasts (presented in Chapter 6) and the economic analysis (presented in Chapter 7), and by using the evaluation process and framework described in Chapter 8.

The strategies were developed following a careful review of existing plans and studies in Texas and Mexico. All the major plans impacting the region—from municipal, regional, federal, and state agencies on both sides of the border—were reviewed, and existing information was incorporated into the key strategies of the BTMP as appropriate. Planning and research documents on the U.S.-Canada border also were reviewed and included as appropriate. The BTMP strategies are grounded in binational data analysis and forecasts that show current and future performance gaps and potential economic impacts.

Stakeholder input (presented in Chapter 9) has been a robust component of the BTMP and played a critical role in the development and organization of strategies. The recommendations were suggested, reviewed, and discussed by a wide variety of binational stakeholders from local, state, and federal perspectives, and in both the private and public sectors. Key opportunities for stakeholder involvement included:

- **Border Trade Advisory Committee (BTAC)** – served as a forum for transportation decisions affecting trade and the movement of freight at the border. The BTAC meetings held in July, August, and September 2020 were particularly focused on BTMP strategies, recommendations, and implementation.

- **Binational Regional Steering Committees (BNRSCs)** – guided the development of the BTMP within their respective regions to verify that recommendations were consistent with regional and statewide priorities. The BNRSC meetings held in July, August, and September 2020 were particularly focused on BTMP strategies, recommendations, and implementation.

- **Stakeholder and Public Groups** – provided local feedback, input, and perspective representative of those who use the border crossings for both commercial and personal reasons and understand the border region.

- **Binational Federal, State, and Local Agencies** – helped TxDOT understand the interaction between proposed recommendations and existing policies and priorities. Interviews were conducted in July and August 2020, with representatives of key U.S. and Mexico federal agencies, such as U.S. Customs and Border Protection, Federal Highway Administration, Secretaría de Comunicaciones y Transportes (Secretariat for Communications and Transportation, SCT), and the Secretaría de Relaciones Exteriores (Secretariat for Foreign Relations, SRE); representatives of Texas and the four Mexican border states; and with regional and city governing entities and business representatives in the border region.
10.1 Policy, Program, and Project Overview

The strategies outlined in this chapter fall into three distinct categories: policies, programs, and projects. Together they form the recommendations of the BTMP.

- **Policies** are broad recommendations that set the direction of agencies involved in border planning and provide the foundation for decisions. The BTMP recommends 22 policies to advance borderwide transportation goals.

- **Programs** are a collection of implementable initiatives to achieve a policy objective and consist of actions that are repeatable across multiple platforms or locations. The BTMP recommends 153 programs to address Texas-Mexico transportation infrastructure needs.

- **Projects** are targeted, location-specific actions undertaken to achieve a policy objective. The BTMP recommends 661 projects at a cost of $37.4 billion.

The three types of strategies are interdependent and work holistically to address issues and needs. The relationship between policies, programs, and projects are shown in Figure 10.1-1.

Per federal agreement, all policies, programs, and projects requiring a federal or state action, for example, funding, environmental clearance, etc., must be included in the Texas-Mexico Border Transportation Master Plan (BTMP).

This chapter describes the strategies in more detail and links them to the BTMP goals.
Programs are described and evaluated by their potential impact on the need they are intended to address. Once evaluated, they are sorted into tiers: high, medium, and low impact.

Projects are analyzed by their level of impact on addressing the nine BTMP goals and are given a weighted score accordingly. They are also categorized by high, medium, and low impact tier.

Policies provide the fundamental foundation for both programs and projects and thus are not evaluated by tier or impact.

Many recommendations embodied in this chapter require a combination of binational stakeholders—from federal, state, and local agencies and the private sector—to advance their implementation. The long-term success of the plan is dependent on having a variety of stakeholders take responsibility to achieve BTMP goals, policies, and programs within their purview, report their successes and challenges, and continue to make progress. Binational and public-private cooperation and coordination are critical to fulfilling the BTMP goals.

### 10.2 Policy Recommendations

Policies are broad recommendations that set the direction of agencies and provide the foundation for decisions. Policies provide the foundation for programs and projects, can be applied borderwide, and are critical for border crossings and corridors.

This section presents 22 policy recommendations that support the development of comprehensive strategies that align with BTMP goals and objectives. Policies are organized as they relate to border crossings and corridors in the Texas-Mexico multimodal transportation network, or as being applicable to both, systemwide. Of the 22 recommended policies, five are specific to border crossings, eight are specific to corridors, and nine apply systemwide.

A critical component of each policy strategy is that, to be successful, it must be undertaken by federal, state, regional, and local public and private stakeholders on a binational level. Entities at all levels, and on both sides of the border, must actively engage to maximize the effectiveness of each policy.

The following policy recommendations are provided by goal. Some goals are further organized by the type of solution. In those cases, additional policies more specific to the solution are also described.
10.2.1 Mobility and Reliability

The Mobility and Reliability goal was identified by stakeholders as having the greatest need. The following statements characterize the issues for stakeholders:

- Increasing volumes result in longer border crossing times and delays, roadway congestion, and blocked at-grade rail crossings.
- Insufficient physical capacity to accommodate growth causes longer border crossing times and delays, roadway congestion, and over-burdened rail crossings.
- Inefficient processes, outdated technology, and inadequate cross-border communication negatively impact mobility and reliability.

The policy solutions for this goal fall within the following five policy solution areas, Operational Efficiency, System Capacity, Texas-Mexico Coordination, New Technologies, and Performance Monitoring.

### Operational Efficiency

**Border Crossings:** Develop a comprehensive strategy for robust, coordinated, and efficient border management and investments. **Objectives:**

- Maximize use of existing border crossings by redistributing traffic demand among underutilized crossings.
- Alleviate border crossing times and delays to create a more mobile and reliable cross-border transportation system.
- Alleviate congestion by standardizing systems and streamlining Texas-Mexico border procedures to better harmonize border processes on both sides of the border.
- Enhance demand-management\(^2\) approaches at the border crossings to improve the uneven distribution of cross-border movements and across passenger and commercial uses.
- Facilitate joint understanding and analysis of the border travel process to more effectively address border transportation issues.

**Corridors:** Develop a comprehensive strategy to enhance operational efficiency along designated Texas-Mexico multimodal transportation corridors. **Objectives:**

- Maximize use of existing border crossings by redistributing traffic demand among corridors connecting to underutilized crossings.
- Alleviate roadway congestion along multimodal corridors, roadways, and segments that impede the efficient cross-border movement of people and goods.

\(^2\) In the broadest sense, demand management is defined as providing travelers with effective choices to improve travel reliability. See [https://ops.fhwa.dot.gov/plan4ops/trans_demand.htm](https://ops.fhwa.dot.gov/plan4ops/trans_demand.htm) for more details.
- Enhance demand-management approaches on corridors to address the uneven distribution of cross-border movements and across passenger and commercial uses.

### System Capacity

**Border Crossings:** Develop a comprehensive and binational mechanism for enhancing system capacity of existing border crossings and assessing the feasibility of new border crossings. Objectives:

- Address border crossing throughput and capacity to accommodate growing traffic volumes over time.
- Advance shared understanding of border crossing and corridor system capacity conditions and needs.
- Enhance the mobility and reliability of cross-border trips by improving demand management across the border, reducing cross-border trip times, and enhancing multimodal connectivity.
- Foster Texas-Mexico evaluations and planning processes for system capacity improvements at border crossings, such as border crossing expansions or new border crossings.

**Corridors:** Develop a comprehensive and Texas-Mexico mechanism for enhancing system capacity of designated multimodal corridors and assessing the feasibility of new corridors. Objectives:

- Develop corridor capacity to accommodate growing traffic volumes over time.
- Update regional roadways in designated corridors to meet current design standards and to accommodate projected travel demand over time.
- Advance shared understanding of border crossing and corridor system capacity conditions and needs.
- Foster binational evaluations and planning processes for future/planned transportation facilities in multimodal corridors.
Texas-Mexico Coordination

**Systemwide:** Enhance Texas-Mexico coordination, collaboration, and cooperation. Objectives:

- Align and harmonize priorities and solutions among federal, state, regional, local, and private stakeholders across the Texas-Mexico border and within each of the three regions.
- Facilitate the joint development and implementation of effective policies, programs, and projects across the Texas-Mexico multimodal transportation system.
- Increase participation of binational federal, state, regional, local, and private partners to address border planning, management, and operations.
- Develop planning, investment, management, and operation of border crossings and the multimodal transportation network.
- Foster standardization of regulations and practices across the border between the U.S and Mexico.

New Technologies

**Systemwide:** Invest in, integrate, and deploy technologies and innovation to develop the border region as a center of innovation. Objectives:

- Alleviate border crossing times, delays, and roadway congestion using new technologies.
- Analyze, evaluate, and advance emerging technologies on border crossings and corridors.
- Enhance the mobility and reliability of cross-border trips by utilizing data and technologies to inform users.
- Prepare the Texas-Mexico multimodal transportation system to integrate and deploy current and future technological advances.
- Facilitate smart solutions to include capacity and bandwidth for yet-unknown technologies, vehicles, and cargo types along border crossings and corridors.
**Performance Monitoring**

**Systemwide:** Develop a comprehensive Texas-Mexico performance monitoring and evaluation system for the border transportation system. Objectives:

- Advance a comprehensive, shared understanding of the conditions and needs of border crossings and the Texas-Mexico multimodal transportation system to support decision-making.
- Facilitate comprehensive systemic monitoring and evaluation of the Texas-Mexico multimodal border transportation system over time.

**10.2.2 Economic Competitiveness**

The economic potential of the border is not fully realized due to inefficiencies. This issue underpins the goal of economic competitiveness.

**Systemwide:** Harmonize Texas-Mexico policy coordination to support current and future trinational economic competitiveness—U.S., Mexico, and Canada. Objectives:

- Capitalize on the binational economic opportunities provided by the U.S.-Mexico-Canada Agreement (USMCA).
- Facilitate multimodal infrastructure capacity for the cross-border movement of people and goods.
- Foster a comprehensive and shared understanding of the issues that impede the safe, reliable, and efficient movement of people and goods, and the impacts of those issues on commerce and local, regional, state, national, and international commerce.
- Enable sufficient funding for infrastructure investments to enhance efficiencies of cross-border trip routes both now and in the future.

**10.2.3 Safety and Security**

A concentration of incidents and crashes occurs in the border region, in urban areas and near border crossings. This issue is a major factor in identifying policies to address safety and security.
**Systemwide:** Identify and implement strategies to enhance safety and security in the border region. Objectives:

- Address risks of crashes, fatalities, and injuries associated with crossing the border and travel borderwide across all modes of transportation.
- Incorporate safety and security factors into transportation infrastructure design and investment decisions.
- Expand educational and training programs to enhance safety and security.
- Ease highway/rail conflicts through enhanced coordination among binational, federal, state, regional, local, and rail partners.
- Facilitate safe movement of hazardous materials and oversize/overweight loads at border crossings and through urban population centers.
- Address public health needs related to the Texas-Mexico multimodal transportation system.
- Treat safety hotspots especially in urban areas and near border crossings.

**10.2.4 Connectivity**

Demand on the Texas-Mexico multimodal transportation network has outpaced capacity, resulting in inefficient connectivity across the border and between border crossings. Connectivity in the border region requires capacity and processes to support movement across the border, between border crossings, and in the area immediately surrounding the border crossing. Policy solutions to address the connectivity goal include:

- First and Last Mile Connections
- Interconnection Between Border Crossings
- Cross-border Movement

**First- and Last-mile Connections**

**Corridors:** Provide multimodal roadway connectivity for first- and last-mile connections from border crossings to designated corridors and border communities. Objectives:

- Facilitate first- and last-mile connectivity to foster the movement of people and goods.
- Develop efficient access from border crossings to bike/pedestrian facilities, transit systems, airports, rail terminals, and seaports.
- Enhance bike/pedestrian connectivity near border crossings and gaps between the network and borderwide major destinations.
- Foster transit service and connectivity in the border region with improved connections for bicyclists and pedestrians, increased frequency of transit service, and shorter transit crossing times.

**Interconnection between Border Crossings**

**Corridors:** Provide multimodal connectivity between border crossings to provide enhanced network redundancy for efficient border region trips. Objectives:

- Address the potential impact of disruptive events by providing enhanced network redundancy on both sides of the border.
- Enable demand management techniques to address congestion.
- Support the future growth of the Texas (U.S.) and Mexican economies by meeting demands of higher forecasted movements of people and goods through enhanced network connectivity.\(^3\)
- Facilitate connectivity between border region multimodal transportation networks.

**Cross-border Movements**

**Corridors:** Facilitate multimodal connectivity between key Texas (U.S.) and Mexico origins and destinations throughout the Texas-Mexico multimodal transportation network. Objectives:

- Strengthen borderwide region north-south and east-west corridor connectivity.
- Address rail bottlenecks through the implementation of unified rail inspections, improved screening technology, international rail crews, developing binational railcar inspection standards, and others.
- Upgrade highway networks to meet demands of increasing movements to intermodal facilities.
- Support future economic growth through enhanced network connectivity and improved capacity.

### 10.2.5 Cross-border Resiliency

The border region is susceptible to disruptions such as accidents, severe weather events, and public health issues that impact the safe and efficient movement of people and goods. Systemwide policy solutions were developed to address cross-border resiliency.

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\(^3\) Even though the economic impacts of the movement of goods through the Texas-Mexico border also benefit Canada, the focus of the recommendations in this chapter are Texas (U.S.) and Mexico.
**Systemwide:** Develop a comprehensive Texas-Mexico policy framework for a resilient border. Objectives:

- Develop systemic processes, procedures, and investments to address coordinated border transportation system needs during disruptive events.
- Foster alignment of business continuity planning at border ports between the two nations.
- Enhance corridors and system redundancy for the safe, efficient, and reliable movement of people and goods.
- Facilitate continuity of border operations and processes to withstand and curtail the impact of disruptive events.
- Prioritize funding for resiliency planning and emergency operations to prepare, respond to, and recover from disruptions.

### 10.2.6 Sustainable Funding

The needs of the border transportation system outpace the level of sustainable and consistent funding in both corridors and border crossings. Policy solutions were developed to address sustainable funding for border crossings and corridors.

**Border Crossings:** Develop mechanisms to facilitate border crossing funding and financing. Objectives:

- Foster federal, state, and local investment in the Texas-Mexico transportation infrastructure to enhance the movement of people and goods.
- Develop dedicated funding for border-related infrastructure.
- Expand existing funding programs to support border crossing issues and needs.
- Coordinate investment timelines on both sides of the border.
- Expand use of innovative funding and financing sources such as NADBank, Donation Acceptance Program, Reimbursable Services Program, and others. Communicate the funding and financing needs of Texas-Mexico transportation users and communities.
- Prioritize border region issues and needs into funding decisions.

**Corridors:** Develop mechanisms to support multimodal transportation system funding and financing. Objectives:

- Foster federal, state, and local investment in the Texas-Mexico transportation infrastructure to enhance the movement of people and goods.
- Develop dedicated funding for border region multimodal corridors such as a Texas-Mexico trade lanes program intended to enhance transportation system connections.
Expand existing funding programs to integrate and support multimodal corridor issues and needs.

Secure and expand innovative funding and financing sources such as public-private partnerships, tolling programs, tax credits and incentives, private-sector funding, and others.

Advance funding and financing needs of Texas-Mexico transportation users and communities.

Prioritize border region issues and needs into funding decisions.

### 10.2.7 Asset Preservation

Asset preservation is needed to keep the multimodal border transportation system in a state of good repair and operating efficiently. Asset preservation policy solutions address border crossings and corridors.

**Border Crossings:** Develop border crossing asset management frameworks to preserve border crossings and facilities.

Objectives:

- Address aging, obsolete, and deteriorating vehicular and rail border crossings.
- Maintain border crossings and facilities in a state of good repair over time.
- Track border crossing and facility conditions and share best practices on asset management.
- Protect the existing investments in the border transportation system.
- Enhance asset management partnerships among federal, state, regional, local, and private partners in the U.S. and Mexico.

**Corridors:** Develop multimodal corridor asset management frameworks to preserve assets on the border transportation system. Objectives:

- Address aging, obsolete, and deteriorating infrastructure in the Texas-Mexico multimodal transportation network.
- Maintain pavements, bridges, and rail facilities are in a state of good repair over time.
- Track asset conditions and provide mechanisms for sharing best practices on asset management.
- Protect the existing investments in the Texas-Mexico multimodal transportation network.
- Enhance asset management partnerships among federal, state, regional, local, and private partners in the U.S. and Mexico.
### 10.2.8 Customer Service
Feedback from border transportation users should be incorporated in decision-making processes in order to meet current and future needs. Public education and awareness are steps to ensuring the border region issues are served.

**Public Education and Awareness**

**Systemwide:** Coordinate Texas-Mexico stakeholder and public outreach, information, and engagement activities. Objectives:

- Facilitate the collection and distribution of information about the border to users.
- Obtain and incorporate feedback in border transportation planning processes.
- Inform local jurisdictions, businesses, and communities, on the roles and responsibilities of different agencies facilitating cross-border trade and travel.
- Develop partnerships with public and private partners to develop and implement strategies over time.
- Provide regular forums for communicating border transportation achievements and needs to decision-makers.
- Advance messaging consistency about the importance of the border to the Texas, U.S., and Mexican economies, and the personal stories of those who live in and love the border region.

### 10.2.9 Data Collection, Sharing, Harmonization, and Analysis
There is a need for consistency in trade and transportation data among federal, state, regional, local, and private partners to fully understand the conditions and needs of the Texas-Mexico multimodal transportation network.

**Systemwide:** Develop a comprehensive mechanism to collect, share, harmonize, and analyze data regularly and consistently as a means of improving border transportation planning, programming, and operations. Objectives:

- Harmonize Texas-Mexico data collection and analysis among all border stakeholders to advance borderwide planning, investments, management, and operations.
- Foster a comprehensive, shared understanding of the conditions and needs of border crossings and the Texas-Mexico multimodal transportation system.
- Facilitate comprehensive systemic monitoring and evaluation of the border transportation system over time.
10.2.10 Stewardship and Sustainability

Additional traffic and activity have environmental and community impacts in the border region, including local congestion, safety hot spots, regional air quality, and hazardous material and e-waste. Policy solutions address stewardship and sustainability systemwide.

**Systemwide:** Develop a harmonized, Texas-Mexico policy framework to support and enhance environmental and community stewardship along the border and border transportation system.

Objectives:

- Address environmental impacts throughout the Texas-Mexico transportation system by harmonizing environmental, air quality, including vehicle idling at the border, and hazardous material regulations on both sides of the border.
- Assess energy inefficiency and renewable energy needs throughout the Texas-Mexico multimodal border transportation system.
- Curtail negative community impacts through improvements to the Texas-Mexico transportation system to enhance mobility choices, address mode interactions, limit idling, and address the safe passage of hazardous cargo.
- Obtain input and feedback from border region stakeholders about environmental, community, and investment decisions related to the border region and the Texas-Mexico transportation system.

10.3 Program Recommendations

The BTMP recommends 153 programs to address Texas-Mexico transportation infrastructure needs in support of the recommended policies described in the previous section. In order to show the breadth and variety of recommended programs, this section provides a brief description of an illustrative group of programs. An entire list of the recommended programs appears in **Appendix 10A**.

The appendix contains the following information:

- A brief description of the program
- Links between the specific program, BTMP goals, and a policy
- Information on the impact of the program in achieving the connected goals (high, medium, or low)
- The timeframe in which it can be accomplished (short-term, mid-term, or long-term)
Programs are a collection of initiatives to achieve a policy objective and consist of actions that are repeatable across multiple platforms or locations.

Programs include those specific to border crossings and those specific to corridors, or as being applicable to both, systemwide. Programs apply to multiple locations and, therefore, are not identified by specific border crossing or corridor. Programs in the context of the border region involve undertakings such as:

- The study or methodical consideration of new concepts or actions in a region heavily impacted by cross-border traffic.
- New or enhanced processes or procedures within border crossings or on nearby corridors, such as enhanced inspections or credential checks.
- Operational improvements, such as increased staffing levels and hours of operation at border crossings, and traffic management in connecting corridors.
- The development, maintenance and sharing of data within various levels of government in the border region.
- Ongoing responsiveness to policy recommendations that result in sustainable improvements in the border region as policies or priorities change in one or both countries.
- A higher and more sustained level of collaborative binational discussion and decision-making, and joint implementation whenever possible.

This section presents a subset of the 153 programs identified during this process. This selection is illustrative of the diversity and breadth of the program recommendations included in the BTMP. Each program is linked to goals and to a policy identified in the previous section. The full list of programs in Appendix 10A, include a recommended tier – high, medium or low – that indicates the magnitude of impact that successful implementation of the program would have on addressing the goal(s).

The evaluation criteria for determining the impact of programs are described in detail in Chapter 8. Criteria include the program’s effectiveness in addressing the needs of the region, the number of goals the program addresses, whether a similar program has been successful elsewhere, and the number of factors that might complicate implementation, such as legal impediments.

### 10.3.1 Programs to Address Mobility and Reliability

**Operational Efficiency**

**Policy:** Develop a comprehensive strategy for robust, coordinated, and efficient border management and investments.

**Programs to Address Border Crossings Times and Congestion:**

- Develop a U.S.-Mexico Binational Border Action Plan, similar to the U.S.-Canada “Beyond the Border Action Plan.”
Expand the existing Border Crossing Information System (BCIS) for all movements to all border crossings along the Texas-Mexico border.⁴

- Develop a comprehensive strategy and action plan to expand cross-border unified cargo processing at intermodal rail facilities along the border.

**Programs to Address Corridor Congestion and Delays:**
- Conduct comprehensive traffic studies in urban centers of the border regions.

**Programs to Strengthen CMV Operations in the Texas-Mexico Border Region:**
- Conduct needs assessment of binational cross-border oversize/overweight (OS/OW) project cargo movements within the border regions to provide consistency and reliability.

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### System Capacity

**Policy:** Develop a comprehensive and binational mechanism for enhancing system capacity of existing border crossings and assessing the feasibility of new border crossings.

**Programs to Expand System Capacity at Border Crossings:**
- Develop a comprehensive framework for studying the feasibility of expanding existing and constructing new border crossings.

**Programs to Expand System Capacity for Corridors:**
- Develop or update regional trade and multimodal transportation plans across all border regions.
- Develop or update regional freight rail mobility studies.

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### Texas-Mexico Coordination

**Policy:** Enhance Texas-Mexico coordination, collaboration, and cooperation.

**Programs to Foster Binational Coordination, Collaboration, and Cooperation for Border Management and Operations:**
- Consider creation of a Texas-Mexico Transportation Task Force to serve as a forum for enhancing bilateral communication, coordination, and collaboration.
- Develop regional binational crossings stakeholder groups—similar to the existing El Paso/Ciudad Juárez International Bridges Committee.

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⁴ The BCIS is currently operational at seven border crossings along the Texas-Mexico border: Ysleta-Zaragoza, Gateway to the Americas, Camino Real International, Laredo-Colombia Solidarity, Pharr-Reynosa International Bridge on the Rise, Veterans International Bridge at Los Tomates and World Trade Bridge. Except for Ysleta-Zaragoza, the system only collects northbound crossing times.
- Develop an action plan to expand and improve the engagement of private-sector stakeholders in border transportation planning and implementation efforts.
- Develop a border resource optimization strategy, in partnership with binational federal agencies, border agencies, and border crossing stakeholders.

**New Technology**

**Policy:** Invest in new technologies and innovation to develop the border region as a center of innovation.

**Programs to Expand Use of Technology and Innovation to Enhance Border Efficiency:**
- Develop a comprehensive technology and implementation plan assessing ways in which new or enhanced infrastructure should include capacity and bandwidth.
- Develop an action plan to upgrade and harmonize toll collection systems across the Texas-Mexico border.
- Develop a strategy and action plan for deploying nonintrusive inspection.
- Develop a strategy and action plan to ease crossing time by implementing the “Single Window” system to allow for electronic submission of documents.

**Programs to Expand Use of Technology and Innovation to Enhance Corridor Efficiency:**
- Conduct a study to assess the effectiveness of traveler information apps in the border region.

**Programs to Advance Future Transportation Technologies in Corridors:**
- Develop strategies to advance future transportation technologies on multimodal corridors.
- Conduct a study on alternative fuel border transportation to identify future transportation infrastructure needs, for example, charging infrastructure to power electric vehicles.

**Performance Monitoring**

**Policy:** Develop a comprehensive binational performance monitoring and evaluation system for the border transportation system.

**Programs to Advance Performance Monitoring and Evaluation:**
- Develop a binational transportation system performance institutional framework to monitor and evaluate the border transportation system.
- Develop a Texas-Mexico borderwide binational traffic management center concept of operations and implementation plan.
10.3.2 Programs to Address Economic Competitiveness

Policy: Harmonize Texas-Mexico policy coordination to support current and future trinational economic competitiveness—U.S., Mexico, and Canada.

Programs to Enhance Binational Coordination to Support Economic Competitiveness:
- Explore expanding the role of the Border Trade Advisory Committee to facilitate ongoing coordination on transportation infrastructure planning between Texas and its partner states in Mexico.
- Consider ongoing coordination and partnerships between the Secretary of State’s Office, TxDOT, and Texas Governor’s Office of Economic Development to assess the impact of the Texas-Mexico cross-border trade.

Programs to Assess the Economic Future of the Texas-Mexico Borderwide Region:
- Conduct a study to assess the impact of COVID-19 on cross-border trade to update the 5-year Texas-Mexico trade outlook.
- Conduct a nearshoring study of economic development opportunities to leverage cross-border supply chains and movement of goods.

Programs to Develop and Strengthen Workforce Strategies:
- Develop binational strategies related to workforce capabilities and training to enhance competitive advantages on both sides of the Texas-Mexico border.
- Conduct a border maquiladora impact study to understand the impacts and needs of maquiladora-related employment across the border.

Programs to Advance Trade Facilitation Strategies:
- Develop a strategy and action plan to implement a border transportation user survey to identify issues and challenges.
- Assess the impact of USMCA implementation on cross-border trade and travel.
- Develop a strategy and action plan to implement USMCA Chapter 7 Customs Initiatives for Trade Facilitation.

10.3.3 Programs for Addressing Safety and Security

Policy: Identify and implement strategies to enhance safety and security at border crossings and within corridors.
Programs to Address Border Crossings Safety and Security:

- Conduct regional border crossing studies to evaluate design challenges and opportunities to separate transportation mode conflicts.
- Develop a strategy and action plan to enhance the safe and secure transport of hazardous materials and lower the risk of incidents at border crossings.

Programs to Address Corridor Safety:

- Develop a training program educating Mexican drivers and drayage companies on U.S. and Texas safety requirements.
- Conduct regional safety hotspot studies to assess the existing design of safety hotspots.

10.3.4 Programs for Addressing Connectivity

**Border Crossing Interconnection**

**Policy:** Develop sufficient multimodal roadway connectivity for first- and last-mile connections from border crossings to designated corridors and border communities.

Programs to Strengthen First- and Last-Mile Connections:

- Develop a 5-year action plan to provide new or enhance existing infrastructure for pedestrians and bicyclists near the border.
- Explore the feasibility of developing park-and-ride locations in the Texas-Mexico border regions.

**First and Last Mile**

**Policy:** Facilitate sufficient multimodal connectivity between border crossings to provide enhanced network redundancy for efficient border region trips.

Programs to Strengthen Connectivity between Border Crossings to Develop Network Redundancy:

- Conduct a study to assess connectivity issues and challenges between existing border crossings.
- Conduct regional connectivity studies from border crossings to Texas and Mexico seaports to assess issues and challenges and identify strategies to address them.

**Interconnection between Border Crossings**

**Policy:** Facilitate sufficient multimodal connectivity between border crossings to provide enhanced network redundancy for efficient border region trips.
Programs to Strengthen Connectivity between Border Crossings to Develop Network Redundancy:

- Conduct a study to assess connectivity issues and challenges between existing border crossings.
- Conduct regional connectivity studies from border crossings to Texas and Mexico rail facilities and seaports.

Policy: Facilitate sufficient connectivity between key Texas (U.S.) and Mexico origins and destinations throughout the border transportation system network.

Programs to Strengthen Connectivity of Corridors:

Develop multimodal integrated corridor management studies related to the Texas-Mexico border.

Programs to Strengthen Connectivity of Border Crossings and Corridors:

- Conduct a cross-border passenger rail feasibility study as recommended by U.S. House and Senate Appropriations Committee research in 2016.

10.3.5 Programs for Addressing Cross-border Resiliency

Policy: Develop a comprehensive binational policy framework for a resilient border.

Programs to Facilitate a Resilient Border:

- Develop Texas-Mexico border region incident response plans to prepare for potential border transportation system disruptions.
- Assess the feasibility of developing a real-time communications system to disseminate information to transportation users.

10.3.6 Programs for Addressing Sustainable Funding

Policy: Develop dedicated mechanisms to provide sustainable border region funding and financing.

Programs to Actively Pursue Funding and Financing for Border Crossings:

- Develop a dedicated Texas-Mexico trade lanes funding program.
- Explore private funding and financing sources as a robust component of overall border crossing funding schemes.
Programs to Actively Pursue Funding and Financing for Corridors:

▪ Explore expansion of financing sources such as NADBank for border region transportation infrastructure.
▪ Expand existing Rider 11(b), CBI, and other funding sources for border-related infrastructure.
▪ Urge the U.S. Department of Transportation to continue authorization of coordinated border infrastructure funding and other border infrastructure-related funding sources.

10.3.7 Programs for Addressing Asset Preservation

Policy: Develop Texas-Mexico asset management frameworks to preserve border crossings and facilities.

Programs to Preserve and Rehabilitate Border Crossing Assets:

▪ Develop a border crossing asset management plan, in collaboration with binational federal governments and border agencies.
▪ Develop a strategy and action plan to form weigh-in-motion and inspection programs across all major commercial border crossings.

Programs to Preserve and Rehabilitate Transportation Facilities Borderwide:

▪ Develop a strategy and action plan to deploy a Binational Border Pavement Program borderwide.
▪ Develop Mexico Pavement Conditions Modeling near the border crossings.
▪ Develop a regional bridge management system to coordinate schedules for repair and maintenance.
▪ Conduct regional sidewalk inventories and maintenance studies.

10.3.8 Programs for Addressing Customer Service

Policy: Coordinate binational stakeholder and public and private outreach, information, and engagement activities.

Programs to Support Binational Stakeholder Engagement:

▪ Develop a strategy and action plan to implement a binational border transportation public education and awareness program.
▪ Develop strategies to regularly engage border region stakeholders to identify, organize, and track issues and needs – including private sector stakeholders.
- Develop a strategy to inform stakeholders on the benefits of participating in Trusted Traveler Programs such as READY and SENTRI as well as the FAST lane programs.

### Data Collection, Sharing, Harmonization, and Analysis

**Policy:** Develop a comprehensive mechanism to collect, share, harmonize, and analyze data regularly and consistently⁵.

**Programs to Harmonize Data Collection, Sharing, and Analysis:**
- Develop a comprehensive borderwide data collection, warehousing, and archiving program.
- Develop an institutional framework for a binational data gap closure working group on border transportation data needs.

#### 10.3.9 Programs for Addressing Stewardship and Sustainability

**Policy:** Develop a harmonized, Texas-Mexico policy framework to support and enhance environmental and community stewardship along the border and border transportation system.

**Programs to Develop Binational Efforts to Enhance Environmental and Community Stewardship:**
- Develop a strategy for expanding air quality monitoring programs to achieve consistency across the border region.
- Assess strategies to facilitate environmental sustainability on the border transportation system through alternative renewable energy uses.
- Consider strategies to generate awareness related to existing environmental programs such as U.S. EPA SmartWay, TCEQ programs, SEMARNAT programs, and others.

### 10.4 Project Recommendations

Recommended projects are targeted actions that complement the recommended programs and are often location-specific, compared to the broader applicability of programs. Together, recommended programs and projects support the directional objectives set forth by the recommended policies.

Texas-Mexico project recommendations are the third component of the BTMP strategies. As noted, projects are targeted, location-specific actions undertaken to achieve a policy direction.

The project recommendations were developed from the BTMP needs assessment, existing state and regional plans, border region literature review, multiple industry meetings and interviews, and project

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⁵ Programs listed align with the efforts of the JWC Cross Border Data Sharing working group.
lists from 69 stakeholders in Texas (U.S.) and Mexico. This project identification and review included binational stakeholder coordination through a robust stakeholder outreach effort.\(^6\)

The resulting comprehensive project list is the basis of this chapter and includes every project identified during the development of the BTMP.

The projects recommended and presented in this chapter address the challenges and needs of moving people and goods across the Texas-Mexico border and throughout the border region. Projects in this chapter are shown from a **borderwide, country\(^7\), and border region perspective**. A full list of recommended projects is provided in **Appendix 10B**. Maps showing the locations of recommended projects by regions are provided in **Appendix 10C**.

**The BTMP project recommendations are a result of a robust stakeholder outreach effort.**

**Project Identification Sources**

The recommended projects in the BTMP include projects in the Texas-Mexico multimodal transportation network and at border crossings in Texas (U.S.) and in Mexico. They include:

- All planned projects in the 2021 Unified Transportation Program and the TxDOT Project Tracker, including both partially and fully funded projects
- All planned projects in the Mexico National Infrastructure Development Program
- Project recommendations from Mexican border states
- Private-sector rail projects identified by the railroads and public-sector partners regardless of funding status
- Projects proposed by stakeholders that are not yet in any TxDOT plan
- Strategic recommendations provided by each of the border regions
- Proposed new border crossing information as well as existing border crossing expansion/improvements

**Project Classifications**

Recommended projects were identified as border crossing-related projects and corridor-related projects. **Border crossing-related projects** are defined as improvements at ports of entry and supporting facilities such as traffic management and new technologies, and include projects such as new border crossings, improvements to existing crossings, and border expansion projects. **Corridor-related projects** include highway, rail, and other multimodal facilities that provide a regional benefit or a last mile connection to a port of entry. As such, these identified projects include improvements on both sides of the border that provide opportunities for more efficient movement of people and goods in the border region.

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\(^6\) Stakeholders were made aware that projects located along the Texas-Mexico border seeking Federal or State action must be included in the BTMP.

\(^7\) Projects listed in this chapter as Texas (U.S.) projects are located primarily in Texas and projects listed as Mexico projects are located primarily in Chihuahua, Coahuila, Nuevo Leon, and Tamaulipas.
In the following sections, projects are shown by classification—border crossing and corridor—by BTMP goals and by system/mode. Projects are also classified as low, medium, or high impact to represent their overall effect and whether the projects are funded or unfunded. Furthermore, the projects are separated borderwide, by country and by border region, and the analysis follows the evaluation process outlined in Chapter 8.

10.4.1 Borderwide Summary

The BTMP identifies 661 projects currently under development or in the planning phase and includes those that are funded, partially funded, and or unfunded. The total estimated cost of these projects is $37.4 billion, including projects on both the Texas (U.S.) and Mexico sides of the border, and reflects current cost information.

Borderwide, there are 193 border crossing projects totaling $6.0 billion and 468 corridor projects totaling $31.4 billion of estimated costs. A complete list of the project costs, separated by border region and divided by border crossings and corridors, is provided in Appendix 10B.

These projects represent recommended border crossing-related and corridor-related projects from the three border regions. Twenty nine percent of the projects are border crossing projects and 71 percent of the projects are corridor projects. Of the estimated $37.4 billion in project costs identified, 16 percent are border crossing project costs and 84 percent are corridor-related project costs.

The BTMP identifies 559 projects in Texas (U.S.) and 102 projects in Mexico. Of the total cost of $37.4 billion, $32.7 billion—87 percent—correspond to Texas (U.S.) projects, while $4.6 billion—13 percent—correspond to Mexico projects. These projects provide a broad representation from all three border regions as well as binational participation in identifying recommended projects on the Texas (U.S.) and Mexico sides. Table 10.4-1 shows the breakdown of these projects between border crossing projects and corridor projects by the three Texas-Mexico border regions. The following sections summarize recommended projects and overall costs by region.

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8 The systems/modes category is based on standard planning practices and is comprised of a system, including TxDOT on-system roadways, other roadways, border crossings, freight rail, and rail grade separation, and a mode, including pipeline, airport, pedestrian and bicycle, port, and transit.

9 Table cost totals in this section may vary due to rounding.
Table 10.4-1. Recommended Projects for Border Crossings and Corridors by Region

<table>
<thead>
<tr>
<th>Region</th>
<th>Border Crossing Projects</th>
<th>Border Crossing Cost</th>
<th>Corridor Projects</th>
<th>Corridor Cost</th>
<th>TOTAL</th>
<th>TOTAL Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>EL PASO/SANTA TERESA/CHIHUAHUA</td>
<td>97</td>
<td>$2.7B</td>
<td>24</td>
<td>$1.4B</td>
<td>72</td>
<td>$2.0B</td>
</tr>
<tr>
<td>LAREDO/COAHUILA/NUEVO LEÓN/TAMAULIPAS</td>
<td>195</td>
<td>$9.0B</td>
<td>119</td>
<td>$11.4B</td>
<td>154</td>
<td>$11.0B</td>
</tr>
<tr>
<td>RIO GRANDE VALLEY/TAMAULIPAS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td>292</td>
<td>$11.6B</td>
<td>143</td>
<td>$12.8B</td>
<td>226</td>
<td>$13.0B</td>
</tr>
</tbody>
</table>

10.4.2 Region Summary

El Paso/Santa Teresa/Chihuahua Region

This border region has a total of 292 projects with an estimated cost of $11.6 billion, or 31 percent of the total border region projects. This region’s projects include the following:

- 238 projects on the Texas (U.S.) side of the border with an estimated cost of $10.2 billion.
- 54 projects on the Mexico side of the border with an estimated cost of $1.4 billion.

On the Texas (U.S.) side, these projects include large highway capital projects such as the Interstate (I) 10 expansion, State Highway (SH) 178 (Artcraft Road) improvements, and the Borderland Expressway project. The Mexico side includes projects such as the San Jerónimo Border Port and the Juárez Beltway.

Of the 292 projects included in this region:

- 97 are border crossing-related projects with an estimated cost of $2.7 billion.
- 195 are corridor-related projects with an estimated cost of $8.9 billion.

Laredo/Coahuila/Nuevo León/Tamaulipas Region

This border region has a total of 143 projects with an estimated cost of $12.8 billion, or 34 percent of the total border region projects. This region’s projects include the following:

- 113 projects on the Texas (U.S.) side of the border with an estimated cost of $10.8 billion.
- 30 projects on the Mexico side of the border with an estimated cost of $2.0 billion.

On the Texas (U.S.) side, these projects include large capital projects such as improvements to I-35, and improvements to State Loop (SL) 20, and SH 97. The Mexico side includes projects such as the Nuevo Laredo International Bridge and the Gloria to Colombia Roadway improvements.

Of the 143 projects included in this region:

- 24 are border crossing-related projects with an estimated cost of $1.4 billion.
- 119 are corridor-related projects with an estimated cost of $11.4 billion.
Rio Grande Valley/Tamaulipas Region

This border region has a total of 226 projects with an estimated cost of $13.0 billion, or 35 percent of the total borderwide projects. This region’s projects include the following:

- 208 projects on the Texas (U.S.) side of the border with an estimated cost of $11.7 billion.
- 18 projects on the Mexico side of the border with an estimated cost of $1.3 billion.

On the Texas (U.S.) side, these projects include large capital projects such as improvements to I-69, US 281, and the Progreso International Bridge. The Mexico side includes projects such as the Garcia-Monterrey Airport Railway and the Matehuala-Saltillo Highway.

Of the 226 projects included in this region:

- 72 are border crossing-related projects with an estimated cost of $2.0 billion.
- 154 are corridor-related projects with an estimated cost of $11.0 billion.

10.4.3 Project Characterization

The recommended projects provide specific functions and meet specific needs for the border regions. Of the total number of recommended projects, 559 projects are under U.S. jurisdiction and 102 projects are under Mexican jurisdiction.

This section provides a characterization of the recommended projects by:

- BTMP goals/categories that would be addressed by the project – mobility and reliability, safety, connectivity, asset preservation, and multimodal\(^{10}\)
- The affected transportation system - TxDOT on-system roadways, other roadways, border crossings, freight rail, or rail grade separation
- Transportation mode of the project - pipeline, airport, pedestrian and bicycle, seaport, or transit
- Impact – represented by having a low, medium, or high impact to the border economy
- Funding Status – fully funded, partially funded or unfunded\(^{11}\)

This section provides additional insight into which goal category projects fall into, as well as by the projects’ mode – pipeline, airport, pedestrian and bicycle, port, or transit.

\(^{10}\) Multimodal categories correspond to projects that impact multiple modes in the Texas-Mexico transportation network.

\(^{11}\) These definitions follow the TxDOT planning practice used in the Unified Transportation Program, where fully funded means a project has a funding level that covers the totality of its cost, partially funded means a project has a funding level that covers part of its cost, and unfunded means that a project does not have any funding.
Projects by Category

The recommended projects address a variety of identified categories that directly relate to BTMP goals, including mobility and reliability, safety, asset preservation, connectivity, and multimodal. All recommended projects address one or more of the stated goals of the BTMP. Figure 10.4-1 shows the total number of projects and costs by category related to the BTMP goals.

Table 10.4-2 shows the total number of projects and costs by the BTMP categories based on country jurisdiction: U.S. or Mexico. This information shows that the Texas (U.S.) side has 559 projects or 85 percent of the total recommended projects, and 38 percent of these projects address mobility and reliability. Similarly, the Mexico side has 102 projects or 15 percent of the overall recommended projects, and 49 projects representing 48 percent of these projects address mobility and reliability. The following information further summarizes the Texas (U.S.) and Mexico projects.

<table>
<thead>
<tr>
<th>BTMP CATEGORY</th>
<th>PROJECTS</th>
<th>COST</th>
<th>PROJECTS</th>
<th>COST</th>
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</thead>
<tbody>
<tr>
<td>Asset Preservation</td>
<td>27</td>
<td>$0.6B</td>
<td>3</td>
<td>&lt;$0.1B</td>
</tr>
<tr>
<td>Connectivity</td>
<td>171</td>
<td>$7.5B</td>
<td>14</td>
<td>$0.4B</td>
</tr>
<tr>
<td>Mobility and Reliability</td>
<td>212</td>
<td>$17.9B</td>
<td>49</td>
<td>$2.6B</td>
</tr>
<tr>
<td>Safety</td>
<td>84</td>
<td>$2.5B</td>
<td>21</td>
<td>&lt;$0.1B</td>
</tr>
<tr>
<td>Multimodal</td>
<td>65</td>
<td>$4.2B</td>
<td>15</td>
<td>$1.7B</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>559</strong></td>
<td><strong>$32.7B</strong></td>
<td><strong>102</strong></td>
<td><strong>$4.7B</strong></td>
</tr>
</tbody>
</table>

Table 10.4-2. Total Number of Projects and Costs by Category and Country
Projects by Region

Because each of the three border regions has different needs and issues, the overall project makeup results in a portfolio of projects for each region that addresses the unique issues and priorities for that region. The number of projects by category and by region is shown in Table 10.4-3.

<table>
<thead>
<tr>
<th>BTMP CATEGORY</th>
<th>EL PASO/SANTA TERESA/CHIHUAHUA REGION</th>
<th>LAREDO/COAHUILA/ NUEVO LEÓN/TAMAULIPAS REGION</th>
<th>RIO GRANDE VALLEY/ TAMAULIPAS REGION</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>PROJECTS</td>
<td>COST</td>
<td>PROJECTS</td>
<td>COST</td>
</tr>
<tr>
<td>Asset Preservation</td>
<td>9</td>
<td>$0.3B</td>
<td>6</td>
<td>$0.1B</td>
</tr>
<tr>
<td>Connectivity</td>
<td>49</td>
<td>$1.6B</td>
<td>42</td>
<td>$1.9B</td>
</tr>
<tr>
<td>Mobility and Reliability</td>
<td>122</td>
<td>$7.1B</td>
<td>70</td>
<td>$8.8B</td>
</tr>
<tr>
<td>Safety</td>
<td>79</td>
<td>$2.0B</td>
<td>9</td>
<td>$0.1B</td>
</tr>
<tr>
<td>Multimodal</td>
<td>33</td>
<td>$0.7B</td>
<td>16</td>
<td>$1.8B</td>
</tr>
<tr>
<td>TOTAL</td>
<td>292</td>
<td>$11.6B</td>
<td>143</td>
<td>$12.8B</td>
</tr>
</tbody>
</table>

The mobility and reliability category has the highest number of projects in the El Paso/Santa Teresa/Chihuahua Region and the Laredo/Coahuila/Nuevo León/Tamaulipas Region, but has the second highest number of projects in the Rio Grande Valley/Tamaulipas Region. The connectivity category has the highest number of projects in the Rio Grande Valley/Tamaulipas Region and the second highest number of projects in the Laredo/Coahuila/Nuevo León/Tamaulipas Region. Safety is the second highest category for projects in the El Paso/Santa Teresa/Chihuahua Region.

- The El Paso/Santa Teresa/Chihuahua Region has 122 projects and 61 percent of project cost concentrated in mobility and reliability.
- The Laredo/Coahuila/Nuevo León/Tamaulipas Region project costs are heavily concentrated under mobility and reliability, with 70 projects and 69 percent of project cost.
- The Rio Grande Valley/Tamaulipas Region has 94 projects and 34 percent of project cost concentrated in connectivity.
Figure 10.4-2 through Table 10.4-4 show the number of projects in the regions by category with a total of 292 projects in the El Paso/Santa Teresa/Chihuahua Region:

- 238 Texas (U.S.) projects
- 54 Mexico projects

The Laredo/Coahuila/Nuevo León/Tamaulipas Region has a total of 143 projects:

- 113 are Texas (U.S.) projects
- 30 are Mexico projects

In the Rio Grande Valley/Tamaulipas Region, there are 226 projects:

- 208 are Texas (U.S.) projects
- 18 are Mexico projects

Projects by System/Mode

Projects that address the needs and challenges of moving people and goods across the Texas-Mexico border and between the border regions and beyond are complex and wide-ranging. To show the diverse needs of the border regions, projects were classified by system—TxDOT on-system roadways, other roadways, border crossings, freight rail, and rail grade separation, and mode—pipeline, airport, pedestrian and bicycle, port, and transit.

TxDOT on-system roadway projects include improvements to interstate highways, U.S. highways, state highways, and farm/ranch-to-market roads. Other roadway projects include regional and local roads or other projects that represent local or private interests or projects within federal facilities. These system/mode projects provide ways to address transportation needs in the border regions.
and provide important last-mile linkages as people and goods move from the border crossing areas to the local and regional transportation network. The number of projects and cost for each system/mode are presented in Appendix 10D.

The border crossing-related projects are concentrated on general, commercial vehicle, and freight rail projects. The corridor-related projects focus on roadway-type projects. The pipeline and airport modes also show relatively high costs.

While the recommended projects on the Texas (U.S.) side of the border are distributed among most of the system/modes, the recommended projects on the Mexico side focus primarily on roadway and Border Crossing–General projects.

### System Modes by Region

Projects were further classified by both system/mode and border region so that regional stakeholders can better understand how the various modes contributed to their regional system. The number of projects and project costs are presented in Appendix 10D.

All three regions had the highest number of project and costs in the TxDOT-On System Roadways category. The El Paso/Santa Teresa/Chihuahua Regions second highest system/mode category for projects and costs is the Border Crossing-General. The Laredo/Coahuila/Nuevo León/Tamaulipas Region’s second highest system/mode category for projects is the Border Crossing-General and for project costs is Airport. For the Rio Grande Valley/Tamaulipas Region, the second highest category in cost is Pipeline due to the $2.2 billion Rio Bravo Pipeline project. The following is a breakdown of these system/modes by the three border regions including the top three system/modes in each region.

The **El Paso/Santa Teresa/Chihuahua Region** has:

- **TxDOT on-system roadways** (82 projects at $6.4 billion)
- **Border Crossing – General** (66 projects at $2.1 billion)
- **Mexico on-system roadways** (26 projects at $1.2 billion)
The **Laredo/Coahuila/Nuevo León/Tamaulipas Region** has:

- TxDOT on-system roadways (77 projects at $8.9 billion)
- Border Crossing - General (15 projects at $0.9 billion)
- Airport (7 projects at $1.0 billion)

The **Rio Grande Valley/Tamaulipas Region** has:

- TxDOT on-system roadways (93 projects at $6.1 billion)
- Pipeline (1 project at $2.2 billion)
- Border Crossing- General (39 projects at $1.0 billion)

**Projects by Impact**

This section provides the number of projects and costs related to addressing the transportation system needs, as outlined in Chapter 5, using the evaluation process described in Chapter 8. These impacts are depicted as high, medium, and low impact and reflect the overall effectiveness of each project in addressing these transportation system needs. Table 10.4-4 identifies project impact categories by border crossing and corridor-project types. This information shows that most high-impact projects in the border region are corridor-related projects (181) and these projects have a large percentage (76 percent) of overall cost for high-impact projects.

### Table 10.4-4. Projects by Impact and Border Crossings/Corridors

<table>
<thead>
<tr>
<th>FUNDING STATUS</th>
<th>PROJECTS</th>
<th>COST</th>
<th>PROJECTS</th>
<th>COST</th>
<th>PROJECTS</th>
<th>COST</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>BORDER CROSSING</strong></td>
<td></td>
<td></td>
<td><strong>CORRIDOR</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fully Funded</td>
<td>36</td>
<td>$0.4B</td>
<td>149</td>
<td>$5.1B</td>
<td>185</td>
<td>$5.5B</td>
</tr>
<tr>
<td>Partially Funded</td>
<td>14</td>
<td>$0.4B</td>
<td>13</td>
<td>$1.7B</td>
<td>27</td>
<td>$2.1B</td>
</tr>
<tr>
<td>Unfunded</td>
<td>143</td>
<td>$5.2B</td>
<td>306</td>
<td>$24.6B</td>
<td>449</td>
<td>$29.8B</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>193</td>
<td>$6.0B</td>
<td>468</td>
<td>$31.4B</td>
<td>661</td>
<td>$37.4B</td>
</tr>
</tbody>
</table>

Table 10.4-5 identifies project impact categories by country. For projects located in Texas (U.S.), 212 projects totaling $14.6 billion—45 percent of total Texas (U.S.) project costs—are rated high-impact projects. In Mexico, 102 projects are rated as high impact, totaling $4.7 billion—100 percent of total Mexico project costs.
Table 10.4-5. Projects by Impact and Country

<table>
<thead>
<tr>
<th>IMPACT</th>
<th>TEXAS (U.S.)</th>
<th>MEXICO</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>PROJECTS</td>
<td>COST</td>
<td>PROJECTS</td>
</tr>
<tr>
<td>High Impact</td>
<td>212</td>
<td>$14.6B</td>
<td>102</td>
</tr>
<tr>
<td>Medium Impact</td>
<td>311</td>
<td>$17.3B</td>
<td>—</td>
</tr>
<tr>
<td>Low Impact</td>
<td>36</td>
<td>$0.8B</td>
<td>—</td>
</tr>
<tr>
<td>TOTAL</td>
<td>559</td>
<td>$32.7B</td>
<td>102</td>
</tr>
</tbody>
</table>

Table 10.4-6 summarizes projects by impact category for the three border regions. This information highlights the distribution of projects and cost by region.

- The El Paso/Santa Teresa/Chihuahua Region shows 146 projects rated as high impact resulting in $8.1 billion or 69 percent of the region’s project cost.
- The Laredo/Coahuila/Nuevo León/Tamaulipas Region shows 73 projects rated as high impact resulting in $6.6 billion or 52 percent of the region’s project cost.
- The Rio Grande Valley/Tamaulipas Region shows 95 projects rated as high impact resulting in $4.6 billion or 35 percent of the region’s project cost.

Table 10.4-6. Projects by Impact and Border Region

<table>
<thead>
<tr>
<th>IMPACT</th>
<th>EL PASO/SANTA TERESA/ CHIHUAHUA REGION</th>
<th>LAREDO/COAHUILA/NUEVO LEÓN/TAMAULIPAS REGION</th>
<th>RIO GRANDE VALLEY/ TAMAULIPAS REGION</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>PROJECTS</td>
<td>COST</td>
<td>PROJECTS</td>
</tr>
<tr>
<td>High Impact</td>
<td>146</td>
<td>$8.1B</td>
<td>73</td>
</tr>
<tr>
<td>Medium Impact</td>
<td>120</td>
<td>$3.3B</td>
<td>67</td>
</tr>
<tr>
<td>Low Impact</td>
<td>26</td>
<td>$0.3B</td>
<td>3</td>
</tr>
<tr>
<td>TOTAL</td>
<td>292</td>
<td>$11.6B</td>
<td>143</td>
</tr>
</tbody>
</table>

Table 10.4-7 through Table 10.4-9 shows the cost and project numbers by impact for each border region and by country jurisdiction as Texas (U.S.) or Mexico.
### Table 10.4-7. El Paso/Santa Teresa/Chihuahua Region Projects by Impact and Country

#### EL PASO/SANTA TERESA/CHIHUAHU Region

<table>
<thead>
<tr>
<th>Impact</th>
<th>Texas (U.S.) Projects</th>
<th>Texas (U.S.) Cost</th>
<th>Mexico Projects</th>
<th>Mexico Cost</th>
<th>Total Projects</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>High Impact</td>
<td>92</td>
<td>$6.7B</td>
<td>54</td>
<td>$1.4B</td>
<td>146</td>
<td>$8.1B</td>
</tr>
<tr>
<td>Medium Impact</td>
<td>120</td>
<td>$3.3B</td>
<td>-</td>
<td>-</td>
<td>120</td>
<td>$3.3B</td>
</tr>
<tr>
<td>Low Impact</td>
<td>26</td>
<td>$0.3B</td>
<td>-</td>
<td>-</td>
<td>26</td>
<td>$0.3B</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>238</strong></td>
<td><strong>$10.2B</strong></td>
<td><strong>54</strong></td>
<td><strong>$1.4B</strong></td>
<td><strong>292</strong></td>
<td><strong>$11.6B</strong></td>
</tr>
</tbody>
</table>

### Table 10.4-8. Laredo/Coahuila/Nuevo León/Tamaulipas Region Projects by Impact and Country

#### LAREDO/COAHUILA/NUEVO LEÓN/TAMAULIPAS

<table>
<thead>
<tr>
<th>Impact</th>
<th>Texas (U.S.) Projects</th>
<th>Texas (U.S.) Cost</th>
<th>Mexico Projects</th>
<th>Mexico Cost</th>
<th>Total Projects</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>High Impact</td>
<td>43</td>
<td>$4.6B</td>
<td>30</td>
<td>$2.0B</td>
<td>73</td>
<td>$6.6B</td>
</tr>
<tr>
<td>Medium Impact</td>
<td>67</td>
<td>$6.1B</td>
<td>-</td>
<td>-</td>
<td>67</td>
<td>$6.1B</td>
</tr>
<tr>
<td>Low Impact</td>
<td>3</td>
<td>&lt;$0.1B</td>
<td>-</td>
<td>-</td>
<td>3</td>
<td>&lt;$0.1B</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>113</strong></td>
<td><strong>$10.8B</strong></td>
<td><strong>30</strong></td>
<td><strong>$2.0B</strong></td>
<td><strong>143</strong></td>
<td><strong>$12.8B</strong></td>
</tr>
</tbody>
</table>
The BTMP does not identify funding sources for the project recommendations. Instead, the BTMP collected information about funding status and funding amounts directly from project sponsors. Therefore, this section describes the funding status, as reported by project sponsors, of the project recommendations identified in the BTMP.

Of the $37.4 billion identified in project recommendations, $5.5 billion is fully funded. This leaves a funding gap of $29.8 billion.

The BTMP includes a total 661 recommended projects, of which:

- 185 are fully funded at an estimated cost of $5.5 billion.
- 27 projects are partially funded at an estimated cost of $2.1 billion.
- 449 projects at an estimated cost of $29.8 billion remain unfunded.

With approximately $7.6 billion in projects funded or partially funded, a funding gap of $29.8 billion remains, indicating almost 80 percent of the projects in the BTMP are unfunded.

Table 10.4-10 shows project funding status for border crossing-related projects and corridor-related projects.

- Border crossing-related projects. There are 193 border-crossing related projects, of which:
  - 36 projects with an estimated cost of $0.4 billion are fully funded.
  - 14 projects at an estimated cost of $0.4 billion are partially funded.

---

12 Funding sources cited by project sponsors included both public and private sources.
143 projects at an estimated cost of $5.2 billion are unfunded.

- **Corridor-related projects.** There are 468 corridor-related projects, of which:
  - 149 projects with an estimated cost of $5.1 billion are fully funded.
  - 13 projects at an estimated cost of $1.7 billion are partially funded.
  - 306 projects at an estimated cost of $24.6 billion are unfunded.

Table 10.4-10. Projects by Type and Funding Status

<table>
<thead>
<tr>
<th>Funding Status</th>
<th>Border Crossing Projects</th>
<th>Border Crossing Cost</th>
<th>Corridor Projects</th>
<th>Corridor Cost</th>
<th>Total Projects</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fully Funded</td>
<td>36</td>
<td>$0.4B</td>
<td>149</td>
<td>$5.1B</td>
<td>185</td>
<td>$5.5B</td>
</tr>
<tr>
<td>Partially Funded</td>
<td>14</td>
<td>$0.4B</td>
<td>13</td>
<td>$1.7B</td>
<td>27</td>
<td>$2.1B</td>
</tr>
<tr>
<td>Unfunded</td>
<td>143</td>
<td>$5.2B</td>
<td>306</td>
<td>$24.6B</td>
<td>449</td>
<td>$29.8B</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>193</strong></td>
<td><strong>$6.0B</strong></td>
<td><strong>468</strong></td>
<td><strong>$31.4B</strong></td>
<td><strong>661</strong></td>
<td><strong>$37.4B</strong></td>
</tr>
</tbody>
</table>

Table 10.4-11 shows project funding status by country in which the project is located and is summarized as follows.

- **Texas (U.S.) projects.** There are 559 projects located in Texas (U.S.), of which:
  - 180 projects with an estimated cost of $5.5 billion are fully funded.
  - 26 projects at an estimated cost of $2.1 billion are partially funded.
  - 353 projects at an estimated cost of $25.1 billion are unfunded.

- **Mexico projects.** There are 102 projects located in Mexico, of which 96 projects are listed as unfunded with an estimated cost of $4.6 billion.

Table 10.4-11. Projects by Country and Funding Status

<table>
<thead>
<tr>
<th>Funding Status</th>
<th>Texas (U.S.) Projects</th>
<th>Texas (U.S.) Cost</th>
<th>Mexico Projects</th>
<th>Mexico Cost</th>
<th>Total Projects</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fully Funded</td>
<td>180</td>
<td>$5.5B</td>
<td>5</td>
<td>$0.1B</td>
<td>185</td>
<td>$5.5B</td>
</tr>
<tr>
<td>Partially Funded</td>
<td>26</td>
<td>$2.1B</td>
<td>1</td>
<td>&lt;$0.1B</td>
<td>27</td>
<td>$2.1B</td>
</tr>
<tr>
<td>Unfunded</td>
<td>353</td>
<td>$25.1B</td>
<td>96</td>
<td>$4.6B</td>
<td>449</td>
<td>$29.8B</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>559</strong></td>
<td><strong>$32.7B</strong></td>
<td><strong>102</strong></td>
<td><strong>$4.7B</strong></td>
<td><strong>661</strong></td>
<td><strong>$37.4B</strong></td>
</tr>
</tbody>
</table>

The project funding status by border region is summarized below and shown in Table 10.4-12.
The El Paso/Santa Teresa/Chihuahua Region has the largest number of unfunded projects with 219, representing a cost of $8.9 billion.

The Laredo/Coahuila/New León/Tamaulipas Region has the smallest share of total project costs classified as fully funded, with 6 percent of the total project cost in the region.

The Rio Grande Valley/Tamaulipas Region has the largest amount of fully funded projects, with $2.9 billion over 90 projects.

Table 10.4-12. Projects by Region and Funding Status

<table>
<thead>
<tr>
<th>FUNDING STATUS</th>
<th>EL PASO/SANTA TERESA/CHIHUAHUA REGION</th>
<th>LAREDO/COAHUILA/NUEVO LEÓN/TAMAULIPAS REGION</th>
<th>RIO GRANDE VALLEY/TAMAULIPAS REGION</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>PROJECTS</td>
<td>COST</td>
<td>PROJECTS</td>
<td>COST</td>
</tr>
<tr>
<td>Fully Funded</td>
<td>64</td>
<td>$1.9B</td>
<td>31</td>
<td>$0.8B</td>
</tr>
<tr>
<td>Partially Funded</td>
<td>9</td>
<td>$0.9B</td>
<td>8</td>
<td>$0.7B</td>
</tr>
<tr>
<td>Unfunded</td>
<td>219</td>
<td>$8.9B</td>
<td>104</td>
<td>$11.3B</td>
</tr>
<tr>
<td>TOTAL</td>
<td>292</td>
<td>$11.6B</td>
<td>143</td>
<td>$12.8B</td>
</tr>
</tbody>
</table>

High-, medium-, and low-impact projects were identified relative to their funding status as fully funded, partially funded, or unfunded. This information provides insight into how the overall funding is distributed for projects that might have the highest potential to meet the transportation needs in the region. Table 10.4-13 breaks this down by the high, medium, and low impact analysis for the borderwide region and is summarized below.

- **High-impact tier.** There are 314 projects classified in the high-impact tier:
  - 89 projects at $3.2 billion are fully funded.
  - 17 projects at $1.4 billion are partially funded.
  - 208 projects at $14.7 billion are unfunded.

- **Medium-impact tier.** There are 311 projects classified in the medium-impact tier:
  - 92 projects at $2.3 billion are fully funded.
  - 9 projects at $0.7 billion are partially funded.
  - 210 projects at $14.3 billion are unfunded.

- **Low-impact tier.** There are 36 projects classified in the low-impact tier:
  - 4 projects at an estimated cost of less than $0.1 billion are fully funded.
  - 1 project at an estimated cost of less than $0.1 billion is partially funded.
  - 31 projects at an estimated cost of $0.8 billion are unfunded.
Table 10.4-13. Projects by Impact and Funding Status

<table>
<thead>
<tr>
<th>IMPACT</th>
<th>FULLY FUNDED</th>
<th>PARTIALLY FUNDED</th>
<th>UNFUNDED</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>PROJECTS</td>
<td>COST</td>
<td>PROJECTS</td>
</tr>
<tr>
<td>High Impact</td>
<td>89</td>
<td>$3.2B</td>
<td>17</td>
</tr>
<tr>
<td>Medium Impact</td>
<td>92</td>
<td>$2.3B</td>
<td>9</td>
</tr>
<tr>
<td>Low Impact</td>
<td>4</td>
<td>&lt;$0.1B</td>
<td>1</td>
</tr>
<tr>
<td>TOTAL</td>
<td>185</td>
<td>$5.5B</td>
<td>27</td>
</tr>
</tbody>
</table>

Table 10.4-14 and Table 10.4-15 depict the impact and funding levels for U.S and Mexico projects.

Table 10.4-14. Texas (U.S.) Projects by Impact and Funding Status

<table>
<thead>
<tr>
<th>IMPACT</th>
<th>FULLY FUNDED</th>
<th>PARTIALLY FUNDED</th>
<th>UNFUNDED</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>PROJECTS</td>
<td>COST</td>
<td>PROJECTS</td>
</tr>
<tr>
<td>High Impact</td>
<td>84</td>
<td>$3.1B</td>
<td>16</td>
</tr>
<tr>
<td>Medium Impact</td>
<td>92</td>
<td>$2.3B</td>
<td>9</td>
</tr>
<tr>
<td>Low Impact</td>
<td>4</td>
<td>&lt;$0.1B</td>
<td>1</td>
</tr>
<tr>
<td>TOTAL</td>
<td>180</td>
<td>$5.5B</td>
<td>26</td>
</tr>
</tbody>
</table>

Table 10.4-15. Mexico Projects by Impact and Funding Status

<table>
<thead>
<tr>
<th>IMPACT</th>
<th>FULLY FUNDED</th>
<th>PARTIALLY FUNDED</th>
<th>UNFUNDED</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>PROJECTS</td>
<td>COST</td>
<td>PROJECTS</td>
</tr>
<tr>
<td>High Impact</td>
<td>5</td>
<td>&lt;$0.1B</td>
<td>1</td>
</tr>
<tr>
<td>Medium Impact</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Low Impact</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>TOTAL</td>
<td>5</td>
<td>&lt;$0.1B</td>
<td>1</td>
</tr>
</tbody>
</table>
Potential Funding Sources and Financing Mechanisms for Projects

There are no dedicated funding sources for the recommendations identified in the BTMP. However, the BTMP recommends projects to be funded by a variety of sources some of which are outlined below.\(^\text{13}\) Table 10.4-16 outlines the potential funding sources and financing mechanisms in Texas/U.S.

Table 10.4-16. Potential Funding Sources and Financing Mechanisms in Texas/U.S.

<table>
<thead>
<tr>
<th>Source/Program/Mechanism</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Federal</strong></td>
<td></td>
</tr>
<tr>
<td>Customs and Border Protection and General Services Administration</td>
<td>Funds for ports of entry improvements provided through Executive Budget and funded by Congressional appropriation</td>
</tr>
<tr>
<td>Federal-Aid Highway Program - FHWA FAST Act</td>
<td>Funds to each state based on a formula for highway construction, safety, mobility, and freight projects</td>
</tr>
<tr>
<td>Coordinated Border Infrastructure (CBI) Program</td>
<td>Federal funds to address improvements to the safe movement of motor vehicles at or across the land border between the U.S. and Mexico.(^\text{14})</td>
</tr>
<tr>
<td>FHWA Grant Programs: Infrastructure for Rebuilding America</td>
<td>Fund the construction of multimodal infrastructure. These grant and loan application programs have eligibility criteria including project cost and timeframe to begin construction</td>
</tr>
<tr>
<td>Better Utilizing Investments to Leverage Development</td>
<td></td>
</tr>
<tr>
<td>TIFIA Loans</td>
<td>Federal credit program for eligible transportation projects of national or regional significance. May provide three forms of credit assistance - secured (direct) loans, loan guarantees, and standby lines of credit</td>
</tr>
<tr>
<td>Other U.S. Department of Transportation modal administrations</td>
<td>Like the Federal Railroad Administration and the Federal Motor Carrier Safety Administration provide funding for border operations through various programs</td>
</tr>
<tr>
<td>North American Development Bank</td>
<td>Has traditionally funded programs and projects that address environmental issues along the U.S.-Mexico border. Air quality is one of the Bank's sectors to possibly allow funding for POE expansion projects</td>
</tr>
<tr>
<td><strong>State</strong></td>
<td></td>
</tr>
<tr>
<td>Texas Commission on Environmental Quality</td>
<td>Provides funds through a series of programs for air monitoring, water pollution control, emissions reduction, and Local Emergency Planning</td>
</tr>
<tr>
<td>State Infrastructure Bank</td>
<td>At or below market rate loans for right-of-way acquisition, utility relocation, etc.</td>
</tr>
<tr>
<td><strong>State Highway Fund programed through the 10-year Unified Transportation Program</strong></td>
<td>For existing state highway system, including pavement, signs, traffic signals, and other infrastructure assets</td>
</tr>
<tr>
<td>Category 1 – Preventative Maintenance and Rehabilitation</td>
<td>Mobility and added capacity projects funding through the MPOs on urban corridors on the state highway system to mitigate traffic congestion, traffic safety and roadway maintenance or rehabilitation</td>
</tr>
<tr>
<td>Category 2 – Metropolitan and Urban Area Corridor Projects</td>
<td>For transportation projects that qualify for funding from sources not traditionally part of the State Highway Fund.</td>
</tr>
<tr>
<td>Category 3 – Non-Traditionally Funded Transportation Projects</td>
<td></td>
</tr>
</tbody>
</table>

\(^\text{13}\) Additional information on potential funding sources and financing mechanisms is provided in Appendix 10E.

\(^\text{14}\) This program was not reauthorized after 2009.
<table>
<thead>
<tr>
<th>Source/Program/Mechanism</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 4 – Statewide Connectivity Corridor Projects</td>
<td>Located on designated highway connectivity network and address mobility on the state highway system corridors, which provide connectivity between urban areas and other statewide corridors</td>
</tr>
<tr>
<td>Category 5 – Congestion Mitigation and Air Quality Improvement</td>
<td>To address attainment of National Ambient Air Quality Standard in non-attainment areas</td>
</tr>
<tr>
<td>Category 6 – Structures Replacement and Rehabilitation (Bridge)</td>
<td>To address bridge improvements</td>
</tr>
<tr>
<td>Category 7 – Metropolitan Mobility and Rehabilitation</td>
<td>To address transportation needs within the boundaries of metropolitan planning organizations (MPOs) with populations of 200,000 or greater</td>
</tr>
<tr>
<td>Category 8 – Safety</td>
<td>To address highway safety improvements</td>
</tr>
<tr>
<td>Category 9 – Transportation Alternatives Set-Aside Program</td>
<td>To create transportation alternatives for non-drivers</td>
</tr>
<tr>
<td>Category 10 – Supplemental Transportation Programs</td>
<td>To address a variety of transportation improvements.</td>
</tr>
<tr>
<td>Category 11 – District Discretionary</td>
<td>To address TxDOT district transportation needs. Includes Rider 11(b) funding for highway projects within 50 miles of a port of entry</td>
</tr>
<tr>
<td>Category 12 – Strategic Priority</td>
<td>Addresses projects with specific importance to the state, including border and port connectivity projects</td>
</tr>
<tr>
<td><strong>Local and Regional</strong></td>
<td></td>
</tr>
<tr>
<td>Counties and Cities</td>
<td>Fund infrastructure through tax revenues and general obligation bonds</td>
</tr>
<tr>
<td>Metropolitan Planning Organizations</td>
<td>Funding for El Paso, Laredo, and the Rio Grande Valley through their planning process. In addition, Congestion Mitigation and Air Quality Improvement Program funds are available in El Paso</td>
</tr>
<tr>
<td>Toll Revenues</td>
<td>Including revenues from international bridges and funding from Regional Mobility Authorities (RMAs)</td>
</tr>
<tr>
<td><strong>Private Sector</strong></td>
<td></td>
</tr>
<tr>
<td>Public-private partnerships</td>
<td>Combine public and private funds that can be used by several transportation modes.</td>
</tr>
<tr>
<td>Donation Acceptance Program (DAP)</td>
<td>Funding source from both private and local stakeholders for CBP staffing and other border operational expenses</td>
</tr>
<tr>
<td>Private Companies</td>
<td>Direct investment by private companies, including investments in railroad infrastructure and private bridges</td>
</tr>
</tbody>
</table>

Table 10.4-17 outlines the potential funding sources and financing mechanisms in Mexico, categorized into federal, state, and private sources.
### Source/Program/Mechanism

<table>
<thead>
<tr>
<th>Source/Program/Mechanism</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>BANOBREAS, through the Fondo Nacional de Infraestructura (FONADIN) trust fund</strong></td>
<td>Provides grants and loans for transportation infrastructure improvements across multiple modes to cover planning and construction costs</td>
</tr>
<tr>
<td><strong>North American Development Bank</strong></td>
<td>Has traditionally funded programs and projects that address environmental issues along the U.S.-Mexico border. Air quality is one of the Bank’s sectors to possibly allow funding for POE expansion projects</td>
</tr>
<tr>
<td><strong>State</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Mexican Border States public works budgets</strong></td>
<td>Transportation infrastructure improvements including highways and airports and seaports in which the states are owners</td>
</tr>
<tr>
<td><strong>Private</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Public-private partnerships</strong></td>
<td>Combine public and private funds that can be used by several transportation modes.</td>
</tr>
<tr>
<td><strong>Private Companies</strong></td>
<td>Direct investment by private companies, including investments in highways, railroad, and seaport infrastructure.</td>
</tr>
</tbody>
</table>

### 10.5 Summary of Recommendations

The recommended policies, programs, and projects discussed in this chapter are the culmination of the effort to identify goals and assess the overall needs in the region. The BTMP involved continuous, cooperative, and comprehensive binational coordination and leveraged the Texas-Mexico border stakeholders to provide transparent and unprecedented cooperation on both sides of the border.

This BTMP process has resulted in the identification of over 22 recommended policies, 153 recommended programs, and 661 projects that address current and future needs of moving people and goods efficiently and safely across the Texas-Mexico border and in the border regions.

These policies, programs, and project recommendations serve to lay out the roadmap for the short-, medium-, and long-term Implementation Plan in Chapter 11.
Chapter 11
Implementation Plan
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Appendix 11A. Recommended Projects by Timeline
Appendix 11B. Future Crossing Times and Economic Impacts for Additional Scenarios
Chapter 11  Implementation Plan

The *Texas-Mexico Border Transportation Master Plan* (BTMP) is a comprehensive, multimodal, long-range plan with a 2050 time horizon that identifies transportation issues, needs, challenges, opportunities, and strategies. To deliver a blueprint for strategies that can be used both today and tomorrow, this chapter provides a comprehensive Implementation Plan for strategies in the short, medium, and long terms.

The BTMP serves as a guide for collaboration, coordination, partnerships, and decision-making to improve the efficiency of the movement of people and goods across the Texas-Mexico border. The plan is framed by the goals (Chapter 2), explores issues and needs today and in the future (Chapter 5), forecasts future conditions of the Texas-Mexico transportation system in 2050 (Chapter 6), and examines current and future economic impacts (Chapter 7).

In response to the BTMP’s long-term horizon, identifying issues and needs, both now and in the future, the Implementation Plan provides the timeframe for implementing policy, program, and project strategies. The plan gives decision-makers a path forward, laying out short-term actions in 1 to 4 years—2021 through 2024, as well as enabling preparation for future medium-term actions in 5 to 10 years—2025-2030, and long-term improvements in 11+ years—2031-2050.

The Implementation Plan comprises the policy, program, and project priorities developed throughout the BTMP process and evaluated in Chapter 10. Policy, program, and project strategies are not exclusive, but complement one another and work holistically to support the goals of the BTMP. Together, they form the recommendations.
The identification of a timeframe for implementing the recommended strategies was guided by criteria, detailed in Chapter 8, that came from four key sources:

- Review of literature and planning documents;
- Meetings with the Border Trade Advisory Committee and Binational Regional Steering Committees;
- Meetings and interviews with public and private stakeholders in each of the three Texas-Mexico border regions; and
- The BTMP current and future needs assessment.

For projects, the timeframes were based on project-level data collected from local, regional, and state plans that identify expected project timelines, along with information gathered from stakeholders, project sponsors, and TxDOT staff.

Although the timeframes for both programs and projects were developed and vetted based on the extensive information gathered throughout the BTMP process, future timeframes can only be estimated based on the best available information. The Implementation Plan should be re-evaluated and updated annually, as needs and issues change.

11.1 Implementation Plan for Policies

As stated in Chapter 8, all 22 recommended policies are strategic in nature and provide the underlying foundation for the programs and projects, regardless of timeframe. Policies, therefore, were not placed into the short-, medium-, and long-term timeframes. Policies can be implemented immediately and throughout the implementation timeframe, as decision-makers and responsible parties come to an agreement.

Policies are linked to BTMP goals and where goals were further defined by specific solutions. Policies are categorized by those applicable to border crossings, corridors, or systemwide—both border crossings and corridors. The policies briefly described in Table 11.1-1 are discussed in more detail in Chapter 10.
## Table 11.1-1. Summary of Policy Recommendations

<table>
<thead>
<tr>
<th>Policy Summary</th>
<th>BTMP Goal</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Border Crossing Policies</strong></td>
<td></td>
</tr>
<tr>
<td>Develop a comprehensive strategy for robust, coordinated, and efficient border management and investments.</td>
<td>Mobility and Reliability</td>
</tr>
<tr>
<td>Develop a comprehensive and Texas-Mexico mechanism for enhancing system capacity of existing border crossings and assessing the feasibility of new border crossings.</td>
<td>Mobility and Reliability</td>
</tr>
<tr>
<td>Identify and implement strategies to improve safety and security at border crossings.</td>
<td>Safety and Security</td>
</tr>
<tr>
<td>Develop mechanisms to ensure border crossing funding and financing.</td>
<td>Sustainable Funding</td>
</tr>
<tr>
<td>Develop Texas-Mexico asset management frameworks to preserve border crossings and facilities.</td>
<td>Asset Management</td>
</tr>
<tr>
<td><strong>Corridor Policies</strong></td>
<td></td>
</tr>
<tr>
<td>Develop a comprehensive strategy to enhance operational efficiency along designated Texas-Mexico multimodal transportation corridors.</td>
<td>Mobility and Reliability</td>
</tr>
<tr>
<td>Develop a comprehensive and Texas-Mexico mechanism for enhancing system capacity of designated multimodal corridors and assessing the feasibility of new corridors.</td>
<td>Mobility and Reliability</td>
</tr>
<tr>
<td>Identify and implement strategies to improve safety and security along designated corridors.</td>
<td>Safety and Security</td>
</tr>
<tr>
<td>Provide multimodal roadway connectivity for first- and last-mile connections from border crossings to designated corridors and border communities.</td>
<td>Connectivity</td>
</tr>
<tr>
<td>Provide multimodal connectivity between border crossings to provide enhanced network redundancy for efficient border region trips.</td>
<td>Connectivity</td>
</tr>
<tr>
<td>Ensure sufficient multimodal connectivity between key Texas (U.S.) and Mexico origins and destinations throughout the Texas-Mexico multimodal transportation network.</td>
<td>Connectivity</td>
</tr>
<tr>
<td>Develop mechanisms to support multimodal transportation system funding and financing.</td>
<td>Sustainable Funding</td>
</tr>
<tr>
<td>Develop Texas-Mexico asset management frameworks to preserve assets on the border transportation system.</td>
<td>Asset Management</td>
</tr>
<tr>
<td><strong>Systemwide Policies</strong></td>
<td></td>
</tr>
<tr>
<td>Improve Texas-Mexico coordination, collaboration, and cooperation to improve mobility and reliability of the border region transportation system.</td>
<td>Mobility and Reliability</td>
</tr>
<tr>
<td>Invest in, integrate, and deploy technologies to establish the border region as a center of innovation.</td>
<td>Mobility and Reliability</td>
</tr>
<tr>
<td>Develop a comprehensive Texas-Mexico performance monitoring and evaluation system for the border transportation system.</td>
<td>Mobility and Reliability</td>
</tr>
<tr>
<td>Harmonize Texas-Mexico policy coordination to support current and future trinational economic competitiveness—U.S., Mexico, and Canada.</td>
<td>Economic Competitiveness</td>
</tr>
<tr>
<td>Identify and implement strategies to improve safety and security along designated corridors.</td>
<td>Safety and Security</td>
</tr>
<tr>
<td>Develop a comprehensive Texas-Mexico policy framework for a resilient border.</td>
<td>Cross-border Resiliency</td>
</tr>
<tr>
<td>Coordinate Texas-Mexico stakeholder and public outreach, information, and engagement activities.</td>
<td>Customer Service</td>
</tr>
<tr>
<td>Develop a comprehensive mechanism to collect, share, harmonize, and analyze data regularly and consistently as a means of improving service to users of the border transportation system.</td>
<td>Customer Service</td>
</tr>
<tr>
<td>Develop a harmonized, Texas-Mexico policy framework to support and enhance environmental and community stewardship along the border and border transportation system.</td>
<td>Stewardship and Sustainability</td>
</tr>
</tbody>
</table>
11.2 Implementation Plan for Programs

Programs are a collection of implementable initiatives to achieve a policy direction and consist of actions that are repeatable across multiple platforms or locations. Programs are organized by those applicable to border crossings, by those applicable to corridors, or as being applicable to both (systemwide). Programs are not identified by specific border crossing or corridor location, as they apply to multiple locations.

The suggested programs, across all timeframes, categories and goals, represent a broad variety of approaches: process improvements, studies and research, expanding use of technologies, creating new Texas-Mexico working groups, and developing new educational programs, among others.

Chapter 10 recommended 153 programs for the BTMP. Figure 11.2-1 summarizes the programs by implementation timeframe. The criteria used to determine the timeframe for each program is described in Chapter 8.

About 60 percent of the programs will be underway in the medium term, and most of the remaining programs are expected in the short term. Only a handful are considered long-term programs. About 42 percent of the programs (65 programs) are applicable systemwide, and the remainder is divided between those applicable to border crossings and those that apply to corridors.

![Figure 11.2-1. Total Programs by Implementation Timeframe](image)

**Total Programs by Timeframe**

<table>
<thead>
<tr>
<th></th>
<th>Short Term</th>
<th>Medium Term</th>
<th>Long Term</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Border Crossing</td>
<td>18</td>
<td>30</td>
<td>4</td>
<td>52</td>
</tr>
<tr>
<td>Corridor</td>
<td>14</td>
<td>20</td>
<td>2</td>
<td>36</td>
</tr>
<tr>
<td>Systemwide</td>
<td>23</td>
<td>42</td>
<td>–</td>
<td>65</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>55</strong></td>
<td><strong>92</strong></td>
<td><strong>6</strong></td>
<td><strong>153</strong></td>
</tr>
</tbody>
</table>

Programs are connected to the BTMP goals and represent one of the primary means of achieving the goals.

Table 11.2-1 summarizes the programs by timeframe and goal. More than one-third of all the programs (57 programs) are in the Mobility and Reliability goal, and, of these, over half (34 programs), are expected in the medium term, while 20 are expected in the short term, and only 3 in the long term. For most of the goals, a small majority of programs are in the medium term. For two goals, Funding and Customer Service, a majority of goals are in the short term. A complete list of recommended programs is provided in Appendix 10A.
Due to the large number of programs identified, a sample is provided in Table 11.2-2. The table includes a brief explanation of 16 broadly defined program categories by timeframe, organized by the applicability to border crossings, corridors, or both, and linked to the primary goal. The full list of programs categorized by short-, medium-, and long-term timeframes is provided in Appendix 10A.
<table>
<thead>
<tr>
<th>Term</th>
<th>Program Categories</th>
<th>Goals</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Programs for Border Crossings</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Short</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Develop a strategy and action plan for deploying nonintrusive inspection.</td>
<td></td>
<td>Mobility and Reliability, Sustainable Funding</td>
</tr>
<tr>
<td>Explore private funding and financing sources as a robust component of overall border crossing funding schemes.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Programs for Corridors</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Safety and Security</td>
</tr>
<tr>
<td>Develop a training program educating Mexican drivers and drayage companies on U.S. and Texas safety requirements.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Develop a 5-year action plan to provide new or enhance existing infrastructure for pedestrians and bicyclists near the border.</td>
<td></td>
<td>Connectivity</td>
</tr>
<tr>
<td>Expand existing Rider 11(b), Coordinated Border Infrastructure funds, and other funding sources for border-related infrastructure.</td>
<td></td>
<td>Sustainable Funding</td>
</tr>
<tr>
<td><strong>Programs for Border Crossings and Corridors</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Mobility and Reliability, Economic Competitiveness</td>
</tr>
<tr>
<td>Develop regional binational crossings stakeholder groups.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Develop a permanent Texas-Mexico mechanism to facilitate binational collaboration, coordination, and cooperation and to address border issues.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Develop a strategy and action plan to implement a binational border transportation public education and awareness program.</td>
<td></td>
<td>Customer Service</td>
</tr>
<tr>
<td><strong>Programs for Border Crossings</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medium</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Develop a comprehensive technology and implementation plan assessing ways in which new or enhanced infrastructure should enhance capacity and bandwidth.</td>
<td></td>
<td>Mobility and Reliability</td>
</tr>
<tr>
<td>Conduct regional border crossing studies to evaluate design challenges and opportunities to separate transportation mode conflicts.</td>
<td></td>
<td>Safety and Security</td>
</tr>
<tr>
<td>Develop a strategy and action plan to form weigh-in-motion and inspection programs across all major commercial border crossings.</td>
<td></td>
<td>Asset Preservation</td>
</tr>
<tr>
<td><strong>Programs for Corridors</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Mobility and Reliability</td>
</tr>
<tr>
<td>Develop or update regional trade and multimodal transportation plans across all border regions.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conduct multimodal integrated corridor management studies related to the Texas-Mexico border.</td>
<td></td>
<td>Connectivity</td>
</tr>
<tr>
<td><strong>Programs for Border Crossings and Corridors</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cross-border Resiliency</td>
</tr>
<tr>
<td>Develop regional resiliency plans to enhance network redundancy, expand transportation alternatives, and improve connectivity between border crossings and corridors.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Develop a consistent approach to the issuance of Presidential Permit.</td>
<td></td>
<td>Mobility and Reliability</td>
</tr>
<tr>
<td><strong>Programs for Border Crossings</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Long</td>
<td></td>
<td>Safety and Security</td>
</tr>
<tr>
<td>Conduct a study on alternative methods for short-haul cross-border rail cargo transport.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### 11.3 Implementation Plan for Projects

The Implementation Plan includes fully funded, partially funded, and unfunded projects recommended in Chapter 10. A total of 661 projects were identified during the development of the BTMP at a total cost of $37.4 billion.

As described in Chapter 8, the process for identifying projects involved the review of multiple plans on both sides of the border and input from hundreds of stakeholders and project sponsors. All projects identified through the course of the planning process are included in the Implementation Plan.

Projects were assigned a timeframe based on whether the project was included in an adopted plan, and based on input from local and regional officials, as well as from TxDOT border district staff, local and federal stakeholders in Mexico, and from project sponsors.

The following section presents information and results by different geographies, including borderwide, country1, and at a regional level—both as an entire region and by country within the region. Projects are separated by border crossing and corridor designations. Information and tables include a combination of impact tier, implementation timeframe, and funding status.2

#### 11.3.1 Project Implementation Borderwide

This section provides borderwide project information in the short, medium, and long-term timeframes. In addition to timeframe, this section provides information by border crossing and corridor designations.

There is a total of 661 projects with an estimated investment of $37.4 billion borderwide, as shown in Figure 11.3-1. These projects are concentrated within the long-term implementation timeframe.

---

1 Projects listed in this chapter as Texas (U.S.) projects are located primarily in Texas and projects listed as Mexico projects are located primarily in Chihuahua, Coahuila, Nuevo Leon, and Tamaulipas.

2 Cost totals presented in some of the tables in this section may not add due to rounding.

---

![Figure 11.3-1. Total Projects by Implementation Timeframe](#)
Borderwide projects were evaluated by border crossing and corridor projects and their implementation timeframes.

There are 193 total border crossing projects, with 61 projects in the short term, 65 projects in the medium term, and 67 projects in the long term. In total, border crossing projects are projected to cost an estimated $6.0 billion.

Of the 468 total corridor projects, 149 projects are short term, 131 projects are medium term, and 188 projects are long term. In total, corridor projects are estimated to cost about $31.4 billion. Table 11.3-1 presents the number and cost of borderwide projects by implementation timeframe and funding status.

Among 661 total projects across the border worth an estimated $37.4 billion; $29.8 billion in project costs are unfunded. More than 59 percent of the short-term projects ($6.0 billion of $10.1 billion) are unfunded.

Of the $6.0 billion unfunded short-term projects, 35 are high impact: 26 border crossing projects ($0.9 billion) and 9 corridor projects ($2.1 billion).

<table>
<thead>
<tr>
<th>TIMEFRAME</th>
<th>PROJECTS</th>
<th>COST</th>
<th>PROJECTS</th>
<th>COST</th>
<th>PROJECTS</th>
<th>COST</th>
<th>PROJECTS</th>
<th>COST</th>
</tr>
</thead>
<tbody>
<tr>
<td>Short</td>
<td>125</td>
<td>$4.0B</td>
<td>8</td>
<td>$0.2B</td>
<td>77</td>
<td>$6.0B</td>
<td>210</td>
<td>$10.1B</td>
</tr>
<tr>
<td>Medium</td>
<td>47</td>
<td>$1.0B</td>
<td>18</td>
<td>$1.7B</td>
<td>131</td>
<td>$5.6B</td>
<td>196</td>
<td>$8.3B</td>
</tr>
<tr>
<td>Long</td>
<td>13</td>
<td>$0.5B</td>
<td>1</td>
<td>$0.2B</td>
<td>241</td>
<td>$18.2B</td>
<td>255</td>
<td>$18.9B</td>
</tr>
<tr>
<td>TOTAL</td>
<td>185</td>
<td>$5.5B</td>
<td>27</td>
<td>$2.1B</td>
<td>449</td>
<td>$29.8B</td>
<td>661</td>
<td>$37.4B</td>
</tr>
</tbody>
</table>
Table 11.3-2 presents the number and cost of borderwide projects by implementation timeframe and impact. Of the 210 short-term projects, 96 were determined to be high impact. Of these 96 high impact projects in the short term, 35 are unfunded, with a cost of $3.0 billion.

<table>
<thead>
<tr>
<th>TIMEFRAME</th>
<th>HIGH IMPACT</th>
<th>MEDIUM IMPACT</th>
<th>LOW IMPACT</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>PROJECTS</td>
<td>COST</td>
<td>PROJECTS</td>
<td>COST</td>
</tr>
<tr>
<td>Short</td>
<td>96</td>
<td>$5.2B</td>
<td>102</td>
<td>$4.9B</td>
</tr>
<tr>
<td>Medium</td>
<td>98</td>
<td>$5.1B</td>
<td>89</td>
<td>$3.2B</td>
</tr>
<tr>
<td>Long</td>
<td>120</td>
<td>$9.0B</td>
<td>120</td>
<td>$9.2B</td>
</tr>
<tr>
<td>TOTAL</td>
<td>314</td>
<td>$19.3B</td>
<td>311</td>
<td>$17.3B</td>
</tr>
</tbody>
</table>

Table 11.3-3 breaks down projects by border crossing and corridor projects, providing the number and cost of projects across each implementation timeframe. Most of the projects and estimated costs are identified with corridors. For border crossings, $5.2 billion (out of $6.0 billion), or 87 percent is unfunded. Corridors are 78 percent unfunded ($24.6 billion) out of $31.4 billion of identified needs.

<table>
<thead>
<tr>
<th>TIMEFRAME</th>
<th>BORDER CROSSING</th>
<th>CORRIDOR</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>PROJECTS</td>
<td>COST</td>
<td>PROJECTS</td>
</tr>
<tr>
<td>Short</td>
<td>61</td>
<td>$1.5B</td>
<td>149</td>
</tr>
<tr>
<td>Medium</td>
<td>65</td>
<td>$1.3B</td>
<td>131</td>
</tr>
<tr>
<td>Long</td>
<td>67</td>
<td>$3.2B</td>
<td>188</td>
</tr>
<tr>
<td>TOTAL</td>
<td>193</td>
<td>$6.0B</td>
<td>468</td>
</tr>
</tbody>
</table>

11.3.2 Project Implementation by Border Crossing

The following section summarizes border crossing information in different geographic alignments: borderwide, borderwide by country, and by region (as a whole and by country). The information
presented includes information regarding funding status, impact tier, and timeframe. Border crossings are the key piece of transportation infrastructure that enables the movement of people and goods between Texas and Mexico and therefore should be analyzed separately.

Borderwide Perspective: Summary of Border Crossing Projects

This section provides border crossing projects borderwide by their funding status—unfunded, partially funded, and fully funded—along with the associated impact tier and timeframe.

Of the $6.0 billion in estimated costs, $5.2 billion are unfunded. This includes $2.2 billion of short- and medium-term projects.

Table 11.3-4 presents borderwide border crossing projects and costs by funding status and implementation timeframe.

Twenty-six of the 43 short-term, high impact border crossing projects are unfunded. An estimated $4.1 billion in high impact project costs remain unfunded across all timeframes, of which $882 million is in the short term.

The impact tier and timeframe for border crossing projects includes:

- Short term (61 projects): 43 high impact and 18 medium impact projects.
- Medium term (65 projects): 56 high impact and nine medium impact projects.
- Long term (67 projects): 34 high impact, 29 medium impact, and four low impact projects.

Table 11.3-4. Texas (U.S.)/Mexico Border Crossing Projects by Implementation Timeframe and Funding Status

<table>
<thead>
<tr>
<th>TIMEFRAME</th>
<th>FULLY FUNDED</th>
<th>PARTIALLY FUNDED</th>
<th>UNFUNDED</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>PROJECTS</td>
<td>COST</td>
<td>PROJECTS</td>
<td>COST</td>
</tr>
<tr>
<td>Short</td>
<td>18</td>
<td>$0.3B</td>
<td>7</td>
<td>$0.1B</td>
</tr>
<tr>
<td>Medium</td>
<td>10</td>
<td>$0.1B</td>
<td>6</td>
<td>$0.1B</td>
</tr>
<tr>
<td>Long</td>
<td>8</td>
<td>&lt;$0.1B</td>
<td>1</td>
<td>$0.2B</td>
</tr>
<tr>
<td>TOTAL</td>
<td>36</td>
<td>$0.4B</td>
<td>14</td>
<td>$0.4B</td>
</tr>
</tbody>
</table>
Country Perspective: Summary of Border Crossing Projects

This section provides border crossing project information for all three regions by country, in the short-, medium-, and long-term timeframes. The analysis includes information regarding impact tier and timeframe.

United States Border Crossing Projects

Across the region, 85 percent of project costs are unfunded ($4.1 billion). Of that, $3.0 billion of unfunded costs are high impact projects across all timeframes.

For unfunded high impact projects, the summary by timeframe includes:

- Ten short-term projects ($0.4 billion)
- Twenty-seven medium-term projects ($0.6 billion)
- Twenty-two long-term projects ($2.0 billion)

In total, there are 151 border crossing projects in Texas (U.S.). This includes 41 short-term projects, 50 medium-term projects, and 60 long-term projects, as shown Table 11.3-5. Thirty-two of the 151 projects are fully funded; however, this represents a relatively small portion ($0.3 billion) of the total $4.8 billion cost. In addition, $4.1 billion in border crossing project costs are unfunded, while only ten short-term, high impact Texas (U.S.) border crossing projects remain unfunded.

The impact tier and timeframe for Texas (U.S.) border crossing projects includes:

- Short term (41 projects): 23 high impact and 18 medium impact projects.
- Medium term (50 projects): 41 high impact and 9 medium impact projects.
- Long term (60 projects): 27 high impact, 29 medium impact, and four low impact projects.

Table 11.3-5. Texas (U.S.) Border Crossing Projects by Implementation Timeframe and Funding Status

<table>
<thead>
<tr>
<th>TIMEFRAME</th>
<th>FULLY FUNDED</th>
<th>PARTIALLY FUNDED</th>
<th>UNFUNDED</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>PROJECTS</td>
<td>COST</td>
<td>PROJECTS</td>
<td>COST</td>
</tr>
<tr>
<td>Short</td>
<td>14</td>
<td>$0.2B</td>
<td>7</td>
<td>$0.1B</td>
</tr>
<tr>
<td>Medium</td>
<td>10</td>
<td>$0.1B</td>
<td>5</td>
<td>&lt;$0.1B</td>
</tr>
<tr>
<td>Long</td>
<td>8</td>
<td>&lt;$0.1B</td>
<td>1</td>
<td>$0.2B</td>
</tr>
<tr>
<td>TOTAL</td>
<td>32</td>
<td>$0.3B</td>
<td>13</td>
<td>$0.4B</td>
</tr>
</tbody>
</table>

Implementation Plan 11-11
There are 42 border crossing projects in Mexico. Thirty-seven of them are currently unfunded, including $0.5 billion for sixteen short-term, high impact projects.

All Mexico border crossing projects are high impact, representing a total cost of $1.2 billion. Of the 37 unfunded projects, there are 16 short-term ($0.5 billion), 14 medium-term ($0.3 billion), and seven long-term projects ($0.3 billion).

Table 11.3-6 displays the number and cost of border crossing projects by funding status and implementation timeframe for Mexico.

<table>
<thead>
<tr>
<th>TIMEFRAME</th>
<th>FULLY FUNDED</th>
<th>PARTIALLY FUNDED</th>
<th>UNFUNDED</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Short</td>
<td>4</td>
<td>&lt;$0.1B</td>
<td>16</td>
<td>20</td>
</tr>
<tr>
<td>Medium</td>
<td></td>
<td>1</td>
<td>14</td>
<td>15</td>
</tr>
<tr>
<td>Long</td>
<td></td>
<td></td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>TOTAL</td>
<td>4</td>
<td>1</td>
<td>37</td>
<td>42</td>
</tr>
</tbody>
</table>

Regions Perspective: Summary of Border Crossing Projects

This section further analyzes border crossing project implementation timeframes by the three border regions—El Paso/Santa Teresa/Chihuahua, Laredo/Coahuila/Nuevo León/Tamaulipas, and Rio Grande Valley/Tamaulipas.

El Paso/Santa Teresa/Chihuahua Region

In the El Paso/Santa Teresa/Chihuahua Region, $1.9 billion of Texas (U.S.) improvements of $2.4 billion was identified as long term. In Mexico, the majority of the investments are the short and medium terms—$0.18 billion of $0.2 billion.
Table 11.3-7 details the number of border crossing projects by funding status and implementation timeframe for the El Paso/Santa Teresa/Chihuahua Region. For the entire region, approximately $2.4 billion of border crossing project costs are unfunded. Of that, more than $2.2 billion are in Texas (U.S.) and $0.2 billion are in Mexico.

On the Texas (U.S.) side, there are five short-term, high impact projects. There are 14 high impact, medium-term, and 15 high impact, long-term projects that are unfunded.

A summary of impact tiers for Texas (U.S.) projects includes:

- Short term (19 projects): 13 high impact and 6 medium impact projects.
- Medium term (24 projects): 19 high impact and five medium impact projects.
- Long term (30 projects): 15 high impact, 11 medium impact and four low impact projects.

All twenty-four projects on the Mexico side of the region were identified as high impact: 11 short-term, 11 medium term and two long-term projects. The funds needed for these 11 high impact, short-term projects are estimated at $100 million.
In the Laredo/Coahuila/Nuevo León/Tamaulipas Region, 16 of the 24 projects are unfunded with an estimated cost of $1.3 billion. Approximately $0.5 billion of the unfunded costs were identified for seven medium-impact projects in Texas (U.S.) across all time periods. An additional $0.8 billion of unfunded costs are for three high impact, short-term projects in Texas (U.S.), four high impact, long-term projects in Mexico, and one high impact, short-term project in Mexico.

There are 16 unfunded projects representing more than $1.3 billion in the Laredo/Coahuila/Nuevo León/Tamaulipas Region. There are four funded short-term projects for a total of $27 million, as shown in Table 11.3-8.

On the Texas (U.S.) side of the region, there are ten unfunded border crossing projects, requiring an estimated $814 million.

There are three short-term, high impact, and eight medium-term, high impact projects in Texas (U.S.) with an estimated total of $339.5 million.

The impact tier of the Texas (U.S.) projects by timeframe is:

- Short term (6 projects): Three high impact and three medium impact projects.
- Medium term (10 projects): Eight high impact and two medium impact projects.
- Long term (2 projects): Two medium impact projects.

In Mexico, all six projects were identified as high impact across the three timeframes. One is designated in the short-term ($303 million).
Table 11.3-8. Border Crossing Projects in the Laredo/Coahuila/Nuevo León/Tamaulipas Region by Timeframe, Funding Status and Country

<table>
<thead>
<tr>
<th>TIMEFRAME</th>
<th>FULLY FUNDED</th>
<th>PARTIALLY FUNDED</th>
<th>UNFUNDED</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>PROJECTS</td>
<td>COST</td>
<td>PROJECTS</td>
<td>COST</td>
</tr>
<tr>
<td>Short</td>
<td>4</td>
<td>&lt;$0.1B</td>
<td>2</td>
<td>$0.5B</td>
</tr>
<tr>
<td>Medium</td>
<td>4</td>
<td>&lt;$0.1B</td>
<td>6</td>
<td>&lt;$0.1B</td>
</tr>
<tr>
<td>Long</td>
<td>2</td>
<td>$0.3B</td>
<td>4</td>
<td>$0.2B</td>
</tr>
<tr>
<td>TOTAL</td>
<td>4</td>
<td>&lt;$0.1B</td>
<td>4</td>
<td>&lt;$0.1B</td>
</tr>
</tbody>
</table>

Rio Grande Valley/Tamaulipas Region

The Rio Grande Valley/Tamaulipas Region has 72 border crossing projects, with an unfunded need of $1.4 billion. There are ten unfunded short-term, high impact projects ($0.2 billion).

Table 11.3-9 summarizes the number of projects by funding status and implementation timeframe for the Rio Grande Valley/Tamaulipas Region. The unfunded border crossing project costs in the region is $1.4 billion. On the Texas (U.S.) side, there are 37 (of 60) unfunded projects in the region with an estimated cost of $1.0 billion.

On the Texas (U.S.) side, four high impact, short-term projects are unfunded ($66 million).

A summary of Texas (U.S.), projects by impact tier and timeframe includes:

- Short term (16 projects): Seven high impact and nine medium impact projects.
- Medium term (16 projects): 14 high impact and two medium impact projects.
- Long term (28 projects): 12 high impact and 16 medium impact projects.

In Mexico, all twelve projects were identified as high impact, with eight projects in the short term, three projects in the medium term and one in the long term.

Nine of twelve Mexico projects are unfunded with an estimated cost of $390 million. There are eight high impact, short term projects in Mexico, two of which are funded.
Table 11.3-9. Border Crossing Projects in the Rio Grande Valley/Tamaulipas Region by Implementation Timeframe, Funding Status, and Country

<table>
<thead>
<tr>
<th>TIMEFRAME</th>
<th>PROJECTS</th>
<th>COST</th>
<th>PROJECTS</th>
<th>COST</th>
<th>PROJECTS</th>
<th>COST</th>
<th>PROJECTS</th>
<th>COST</th>
<th>PROJECTS</th>
<th>COST</th>
<th>PROJECTS</th>
<th>COST</th>
</tr>
</thead>
<tbody>
<tr>
<td>Short</td>
<td>8</td>
<td>$0.28</td>
<td>2</td>
<td>&lt;$0.1B</td>
<td>1</td>
<td>&lt;$0.1B</td>
<td>7</td>
<td>$0.1B</td>
<td>6</td>
<td>$0.1B</td>
<td>16</td>
<td>$0.3B</td>
</tr>
<tr>
<td>Medium</td>
<td>5</td>
<td>&lt;$0.1B</td>
<td>1</td>
<td>1</td>
<td>11</td>
<td>$0.4B</td>
<td>2</td>
<td>$0.3B</td>
<td>16</td>
<td>$0.5B</td>
<td>3</td>
<td>$0.3B</td>
</tr>
<tr>
<td>Long</td>
<td>8</td>
<td>&lt;$0.1B</td>
<td>1</td>
<td>$0.28</td>
<td>19</td>
<td>$0.5B</td>
<td>1</td>
<td>&lt;$0.1B</td>
<td>28</td>
<td>$0.8B</td>
<td>1</td>
<td>&lt;$0.1B</td>
</tr>
<tr>
<td>TOTAL</td>
<td>21</td>
<td>$0.28</td>
<td>2</td>
<td>&lt;$0.1B</td>
<td>2</td>
<td>$0.28</td>
<td>1</td>
<td>&lt;$0.1B</td>
<td>37</td>
<td>$1.0B</td>
<td>9</td>
<td>$0.4B</td>
</tr>
</tbody>
</table>

11.3.3 Project Implementation Corridor Projects

The following section summarizes corridor project information in different geographic alignments: borderwide, by country and by region. The information presented includes information regarding funding status, impact tier, and timeframe. Corridors provide connectivity between a border crossing and the larger domestic transportation systems. They also provide linkage between origins and destinations on both sides of the border, facilitating the long-haul movement of goods. Therefore, it is important to analyze projects related to corridors separately from projects related to border crossings.

Borderwide Perspective: Summary of Corridor Projects

There are nine unfunded high impact, short-term projects with an estimated cost of $2.1 billion. This is almost nine percent of the $24.6 billion of total unfunded projects.

This section provides corridor projects borderwide by their funding status—unfunded, partially funded, and fully funded—along with the associated impact tier and timeframe.

As shown in Table 11.3-10, of the 468 corridor projects, $24.6 billion of the $31.4 billion cost is unfunded. Approximately 57 percent of the short-term project costs ($4.9 billion) are unfunded; of these, $2.1 billion is associated with high impact, short-term projects.

There are 306 unfunded projects, representing 65 percent of the 468 total projects. Of these projects, 183 are in the long-term timeframe. The remaining projects are divided between medium term (82 projects) and short term (41 projects).

There are 32 low impact projects with an estimated cost of $0.8 billion. Of the $0.8 billion, $0.7 billion was identified as long term, unfunded projects.
Overall, 181 projects were identified as high impact, 255 as medium impact and 32 as low impact. The impact by timeframe is summarized below:

- Short term (149 projects): 53 high impact, 84 medium impact, and 12 low impact projects.
- Medium term (131 projects): 42 high impact, 80 medium impact, and nine low impact projects.

Table 11.3-10. Texas (U.S.)/Mexico Corridor Projects by Implementation Timeframe and Funding Status

<table>
<thead>
<tr>
<th>TIMEFRAME</th>
<th>FULLY FUNDED</th>
<th>PARTIALLY FUNDED</th>
<th>UNFUNDED</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>PROJECTS</td>
<td>COST</td>
<td>PROJECTS</td>
<td>COST</td>
</tr>
<tr>
<td>Short</td>
<td>107</td>
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</tr>
<tr>
<td>Medium</td>
<td>37</td>
<td>$0.9B</td>
<td>12</td>
<td>$1.7B</td>
</tr>
<tr>
<td>Long</td>
<td>5</td>
<td>$0.5B</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>TOTAL</td>
<td>149</td>
<td>$5.1B</td>
<td>13</td>
<td>$1.7B</td>
</tr>
</tbody>
</table>

Country Perspective: Summary of Corridor Projects

This section provides corridor project information for all three regions by country, in the short-, medium-, and long-term timeframes. The analysis includes information regarding impact tier and timeframe.

United States Corridor Projects

In the short term, there are 33 unfunded projects with an estimated cost of $2.8 billion. The unfunded cost includes one high impact project ($32 million), 24 medium impact projects ($2.7 billion), and eight low impact projects ($27 million).

In total, $21.1 billion in Texas (U.S.) corridor project costs remain unfunded and projects estimated at $6.8 billion are fully or partially funded, as shown in Table 11.3-11. Of the fully funded projects ($5.1 billion), $3.0 billion are high impact, $2.1 billion are medium impact, and less than $0.1 billion are low impact. Twelve low impact projects are slated within the short-term timeframe. The medium impact, long-term project overlay contributed the largest portion ($8.3 billion) to the total Texas (U.S.) cost ($27.9 billion).
Overall, one short-term, high impact Texas (U.S.) corridor project remains unfunded. The impact tier summary by timeframe includes:

- Short term (140 projects): 44 high impact, 84 medium impact, and 12 low impact projects.
- Medium term (130 projects): 41 high impact, 80 medium impact, and nine low impact projects.

Table 11.3-11. Texas (U.S.) Corridor Projects by Implementation Timeframe and Funding Status

<table>
<thead>
<tr>
<th>TIMEFRAME</th>
<th>FULLY FUNDED</th>
<th>PARTIALLY FUNDED</th>
<th>UNFUNDED</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>PROJECTS</td>
<td>COST</td>
<td>PROJECTS</td>
<td>COST</td>
</tr>
<tr>
<td>Short</td>
<td>106</td>
<td>$3.7B</td>
<td>1</td>
<td>&lt;$0.1B</td>
</tr>
<tr>
<td>Medium</td>
<td>37</td>
<td>$0.9B</td>
<td>12</td>
<td>$1.7B</td>
</tr>
<tr>
<td>Long</td>
<td>5</td>
<td>$0.5B</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>TOTAL</td>
<td>148</td>
<td>$5.1B</td>
<td>13</td>
<td>$1.7B</td>
</tr>
</tbody>
</table>

There are 60 corridor projects across the three border regions within Mexico. Of these 60 corridor projects, 59 are unfunded, representing a total estimated cost of $3.5 billion. This includes $2.1 billion across eight short-term, high impact projects.

Table 11.3-12 displays the number and cost of corridor projects by funding status and implementation timeframe.
### Table 11.3-12. Mexico Corridor Projects by Implementation Timeframe and Funding Status

<table>
<thead>
<tr>
<th>TIMEFRAME</th>
<th>FULLY FUNDED</th>
<th>PARTIALLY FUNDED</th>
<th>UNFUNDED</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>PROJECTS</td>
<td>COST</td>
<td>PROJECTS</td>
<td>COST</td>
</tr>
<tr>
<td>Short</td>
<td>1</td>
<td>&lt;$0.1B</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Medium</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Long</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>TOTAL</td>
<td>1</td>
<td>&lt;$0.1B</td>
<td>0</td>
<td>$0.0B</td>
</tr>
</tbody>
</table>

### Regions Perspective: Summary of Corridor Projects

This section further analyzes corridor project implementation timeframes by the three border regions—El Paso/Santa Teresa/Chihuahua, Laredo/Coahuila/Nuevo León/Tamaulipas, and Rio Grande Valley/Tamaulipas.

**El Paso/Santa Teresa/Chihuahua Region**

On the Texas (U.S.) side of the El Paso/Santa Teresa/Chihuahua Region, there are 91 unfunded high and medium impact projects with an estimated cost of $5.0 billion. In Mexico, there are 30 unfunded high impact projects, 29 of which are long term, totaling $1.2 billion.

There are $6.5 billion of corridor project costs in the region that are unfunded, as shown in Table 11.3-13. On the Texas (U.S.) side, $1.3 billion of funded projects are high impact projects and $0.9 billion are in the short and medium term. In Mexico, funded projects ($9.2 million) are short term and high impact.

In Texas (U.S.), the majority of unfunded projects are high or medium impact ($5.0 billion), while a minority is low impact projects ($0.3 billion). Of the fully or partially funded projects, $2.0 billion are slated for high impact projects (across 23 projects) and...
$0.4 billion for medium impact projects (across 29 projects). There are only four fully or partially funded projects in the long term.

On the Texas (U.S.) side, there are no short-term, high impact projects that are unfunded.

The impact tier and timeframe for Texas (U.S.) projects includes:

- Short term (49 projects): 11 high impact, 30 medium impact, and eight low impact projects.
- Medium term (71 projects): 24 high impact, 40 medium impact, and seven low impact projects.
- Long term (45 projects): 10 high impact, 28 medium impact, and 7 low impact projects.

On the Mexico side, 29 out of the total 30 projects are high impact and unfunded. The majority of these projects and costs are in the long term.

There are 29 total unfunded projects in Mexico—two short term, and 27 long term.

Table 11.3-13. Corridor Projects in the El Paso/Santa Teresa/Chihuahua Region by Implementation Timeframe, Funding Status and Country

<table>
<thead>
<tr>
<th>TIMEFRAME</th>
<th>Projects</th>
<th>Cost</th>
<th>Projects</th>
<th>Cost</th>
<th>Projects</th>
<th>Cost</th>
<th>Projects</th>
<th>Cost</th>
<th>Projects</th>
<th>Cost</th>
<th>Projects</th>
<th>Cost</th>
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<tbody>
<tr>
<td>Short</td>
<td>34</td>
<td>$0.88</td>
<td>1</td>
<td>&lt;$0.1B</td>
<td>15</td>
<td>&lt;$0.1B</td>
<td>2</td>
<td>$0.2B</td>
<td>49</td>
<td>$0.88</td>
<td>3</td>
<td>$0.2B</td>
</tr>
<tr>
<td>Medium</td>
<td>16</td>
<td>$0.58</td>
<td>2</td>
<td>$0.88</td>
<td>53</td>
<td>$2.9B</td>
<td>71</td>
<td>$4.2B</td>
<td>45</td>
<td>$2.88</td>
<td>27</td>
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</tr>
<tr>
<td>Long</td>
<td>4</td>
<td>$0.58</td>
<td>2</td>
<td>$0.88</td>
<td>41</td>
<td>$2.3B</td>
<td>27</td>
<td>$1.0B</td>
<td>45</td>
<td>$2.88</td>
<td>27</td>
<td>$1.0B</td>
</tr>
<tr>
<td>TOTAL</td>
<td>54</td>
<td>$1.7B</td>
<td>1</td>
<td>&lt;$0.1B</td>
<td>109</td>
<td>$5.3B</td>
<td>29</td>
<td>$1.2B</td>
<td>165</td>
<td>$7.8B</td>
<td>30</td>
<td>$1.2B</td>
</tr>
</tbody>
</table>
In both countries combined, $9.9 billion of project costs in the region are unfunded, as shown in Table 11.3-14. On the Texas (U.S.) side of the region, there are 64 unfunded projects costing an estimated $8.4 billion. Fully and partially funded projects are all high and medium impact projects. There are three low impact projects identified in the short-, medium- and long-term timeframes, one project in each timeframe. All low impact projects are unfunded.

On the Texas (U.S.) side, nine of ten short-term, high impact corridor projects are fully funded ($0.3 billion).

The unfunded amounts for the Texas (U.S.) side of the region include 18 high impact projects ($3.5 billion) and 64 projects ($8.4 billion) across all timeframes. There were three unfunded low impact projects ($50 million) in the short, medium, and long timeframes.

The summary of impact tier by timeframe includes:
- Short term (21 projects): 10 high impact, 10 medium impact, and one low impact project.
- Medium term (26 projects): 6 high impact, 19 medium impact, and one low impact project.
- Long term (48 projects): 16 high impact, 31 medium impact, and one low impact project.

In Mexico, all 24 projects are unfunded with an estimated cost of $1.5 billion. Within the $1.5 billion, there are three high impact, short-term projects ($1.1 billion), one high impact, medium-term project ($60 million) and 20 high impact, long-term projects ($0.4 billion).
Table 11.3-14. Corridor Projects in the Laredo/Coahuila/Nuevo León/Tamaulipas Region by Implementation Timeframe, Funding Status and Country

<table>
<thead>
<tr>
<th>LAREDO/COAHUILA/NUEVO LÉON/TAMAULIPAS REGION</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Corridor Projects by Implementation Timeframe, Funding Status and Country</strong></td>
</tr>
<tr>
<td><strong>FULLY FUNDED</strong></td>
</tr>
<tr>
<td><strong>TEXAS (U.S.)</strong></td>
</tr>
<tr>
<td>Short</td>
</tr>
<tr>
<td>Medium</td>
</tr>
<tr>
<td>Long</td>
</tr>
<tr>
<td>TOTAL</td>
</tr>
</tbody>
</table>

Rio Grande Valley/Tamaulipas Region

On the Texas (U.S.) side of the Rio Grande Valley/ Tamaulipas Region, $2.4 billion of medium impact, short-term projects are unfunded against the total project cost of $10.2 billion. In Mexico, six unfunded high impact projects are also in the short term ($0.8 billion).

Table 11.3-15 shows $8.2 billion of corridor projects in the region are unfunded.

On the Texas (U.S.) side of the region, there are 74 unfunded projects with an estimated cost of $7.4 billion. Of that, $2.4 billion of unfunded projects are medium impact, short-term projects.

Also in the short term, there are two low impact, unfunded projects with an estimated cost of $21 million, as well as 44 medium impact, short-term projects with an estimated cost of $3.7 billion. In the medium- and long-term timeframes, projects are high and medium impact, with the exception of four low impact projects ($0.4 billion).

On the Texas (U.S.) side, no short-term, high impact projects remain unfunded. The summary of impact tier by timeframe includes:

- Short term (70 projects): 23 high impact, 44 medium impact, and three low impact projects.
- Medium term (33 projects): 11 high impact, 21 medium impact, and one low impact projects.
- Long term (45 projects): 10 high impact, 32 medium impact, and three low impact projects.

All Mexico projects are unfunded (six in total). There are three high impact, short-term projects with an estimated cost of $0.8 billion.
At this time, two of the three long-term projects are unfunded and do not have cost estimates. In the long term, all three projects are high impact.

Table 11.3-15. Corridor Projects in the Rio Grande Valley/Tamaulipas Region by Implementation Timeframe, Funding Status and Country

<table>
<thead>
<tr>
<th>TIMEFRAME</th>
<th>PROJECTS</th>
<th>COST</th>
<th>PROJECTS</th>
<th>COST</th>
<th>PROJECTS</th>
<th>COST</th>
<th>PROJECTS</th>
<th>COST</th>
<th>PROJECTS</th>
<th>COST</th>
<th>PROJECTS</th>
<th>COST</th>
<th>PROJECTS</th>
<th>COST</th>
</tr>
</thead>
<tbody>
<tr>
<td>Short</td>
<td>64</td>
<td>$2.48</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>&lt;0.18</td>
<td>15</td>
<td>$2.48</td>
<td>3</td>
<td>$0.88</td>
<td>70</td>
<td>$4.88</td>
<td>3</td>
<td>$0.88</td>
</tr>
<tr>
<td>Medium</td>
<td>12</td>
<td>$0.28</td>
<td>6</td>
<td>$0.28</td>
<td>15</td>
<td>$0.78</td>
<td>-</td>
<td>-</td>
<td>33</td>
<td>$1.28</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Long</td>
<td>1</td>
<td>&lt;0.18</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>44</td>
<td>$4.38</td>
<td>3</td>
<td>&lt;0.18</td>
<td>48</td>
<td>$4.38</td>
<td>3</td>
<td>&lt;0.18</td>
</tr>
<tr>
<td>TOTAL</td>
<td>67</td>
<td>$2.68</td>
<td>0</td>
<td>$0.08</td>
<td>7</td>
<td>$0.28</td>
<td>0</td>
<td>$0.08</td>
<td>74</td>
<td>$7.48</td>
<td>6</td>
<td>$0.88</td>
<td>148</td>
<td>$10.28</td>
</tr>
</tbody>
</table>

11.3.4 Impact of Implementing Recommended Border Crossing Projects

Fully implementing all the border crossing projects identified in the BTMP would reduce future northbound crossing times compared to a “do nothing” scenario. These reductions in northbound crossing times would reduce delays in the future and therefore impact the future cost of missed opportunities to the economies of Texas, U.S., and Mexico. The BTMP defined two alternative future scenarios for the implementation of project recommendations:

- the first scenario corresponds to the implementation of projects at existing border crossings
- the second scenario corresponds to the implementation of projects at existing border crossings plus the construction of new border crossings.

The BTMP produced a high-level estimation of the impacts that these implementation scenarios would have on 2050 border northbound crossing times and quantified the corresponding cost of missed opportunities for the economies of Texas, U.S. and Mexico compared to a “do nothing” scenario.

**Scenario 1: Do Nothing**

Without any improvements to the existing border crossings, total northbound crossing times for POVs and CMVs will increase dramatically, almost thirteenfold between 2019 and 2050, from approximately 17 million hours in 2019 to approximately 230 million hours in 2050. These results correspond to the mid-case forecasts presented in Chapter 6.

**Scenario 2: Implementing all Projects Recommended at the Existing Border Crossings**

The BTMP identifies 174 projects at the existing 28 border crossings along the Texas-Mexico border and the border crossing at Santa Teresa, NM with a total cost of $3.7 billion. Implementing all these projects would reduce total northbound crossing times in 2050 by 46 percent, from approximately 230 million under the “do nothing” scenario to 124 million hours, which is a reduction in lost time worth nearly $2.9 billion. These results are presented in Table 11.3-16.

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3 Excludes 4 rail projects classified as border crossing projects with a cost of $0.6 billion.

4 For POVs, estimated at $8.69 per hour and an average vehicle occupancy of 1.67 people per vehicle. For CMVs, estimated at $42.46 per hour, which takes into account driver wages, benefits, fuel costs, CMV lease
### Table 11.3-16. Total Northbound Border Crossing Times by Year, Scenario and Crossing Type, Improvements to Existing Border Crossings

<table>
<thead>
<tr>
<th>Crossing Type</th>
<th>2019 Crossing Times (hours)</th>
<th>2050 “Do Nothing” Scenario (hours)</th>
<th>2050 Improvements to Existing Border Crossings (hours)</th>
<th>Total Change</th>
<th>% Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>POV</td>
<td>14,244,146</td>
<td>122,836,244</td>
<td>65,756,859</td>
<td>-57,079,385</td>
<td>-46</td>
</tr>
<tr>
<td>CMV</td>
<td>2,683,722</td>
<td>106,876,158</td>
<td>58,429,609</td>
<td>-48,446,549</td>
<td>-45</td>
</tr>
<tr>
<td>Total</td>
<td>16,927,868</td>
<td>229,712,402</td>
<td>124,186,468</td>
<td>-105,525,934</td>
<td>-46</td>
</tr>
</tbody>
</table>

The improvements planned for the existing border crossings are expected to have positive economic impacts on the Texas, U.S. and Mexican economies when compared to the “do nothing” scenario. Their implementation is expected to add $33.5 billion dollars in GDP, 1.5 million jobs, and $20.6 billion dollars in labor income annually to the U.S. and Mexican economies in year 2050 compared to the “do nothing” scenario discussed in Chapter 7. The additional economic impacts for this scenario, compared to the “do nothing” scenario, are presented in Table 11.3-17.

### Table 11.3-17. Additional Economic Impacts of Border Crossing Improvements at the Texas–Mexico Border in 2050 for Improvements to Existing Border Crossings Compared to “Do Nothing”

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Movement of Goods</td>
<td>$20.8</td>
<td>184,695</td>
<td>$12.2</td>
<td>$11.3</td>
<td>1,302,941</td>
<td>$7.6</td>
</tr>
<tr>
<td>Movement of People</td>
<td>$1.0</td>
<td>22,077</td>
<td>$0.6</td>
<td>$0.5</td>
<td>15,407</td>
<td>$0.2</td>
</tr>
<tr>
<td>Total</td>
<td>$21.8</td>
<td>206,771</td>
<td>$12.8</td>
<td>$11.7</td>
<td>1,318,348</td>
<td>$7.7</td>
</tr>
</tbody>
</table>

**Combined Additional Economic Impacts**

<table>
<thead>
<tr>
<th>GDP (Billions of 2019 $)</th>
<th>$33.5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employment (Job-Years)</td>
<td>1,525,120</td>
</tr>
<tr>
<td>Labor Income (Billions of 2019 $)</td>
<td>$20.6</td>
</tr>
</tbody>
</table>

GDP: gross domestic product

**POV Impacts under Scenario 2**

Under this scenario, crossing times for POVs in 2050 would decrease from 122.8 million hours under the “do nothing” scenario to 65.7 million hours. This represents a reduction of 46%.

---

5 The future (2050) economic impacts of delays presented in Chapter 7 are based on the delays observed under the mid-case forecasting scenario, and therefore correspond to the “do nothing” scenario.
The reductions in POV crossing times under this scenario translate to almost $1.5 billion in additional GDP, 37,000 additional jobs and $0.8 billion in additional labor income in the year 2050 compared to the “do nothing” scenario.

**CMV Impacts under Scenario 2**

Under this scenario, crossing times for CMVs in 2050 would decrease from 106.9 million hours under the “do nothing” scenario to 58.4 million hours. This represents a reduction of 45%.

The reductions in CMV crossing times under this scenario translate to almost $32.1 billion dollars of additional GDP, 1.48 million of additional jobs and $19.8 billion in additional labor income in the year 2050 compared to the “do nothing” scenario.

**Scenario 3: Implementing all Projects Recommended at the Existing Border Crossings and Construction of New Border Crossings**

The BTMP identifies a total of 185 border crossing projects with a total cost of $5.3 billion when new border crossings are combined with the improvements included in Scenario 2. Table 11.3-18 shows that aggregate 2050 northbound crossing times for POVs and CMVs along the entire Texas-Mexico border are reduced by over 60 percent, from approximately 230 million hours under a “do nothing scenario” to 91 million hours under a scenario where both improvements to existing border crossings are implemented and new border crossings are built. This is a reduction in lost time worth nearly $3.8 billion.

<table>
<thead>
<tr>
<th>Crossing Type</th>
<th>2019 Crossing Times (hours)</th>
<th>2050 “Do Nothing” Scenario Crossing Times (hours)</th>
<th>2050 Improvements to Existing Border Crossings Plus New Border Crossings (hours)</th>
<th>2050 Total Change</th>
<th>2050 % Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>POV</td>
<td>14,244,146</td>
<td>122,836,244</td>
<td>46,931,709</td>
<td>-75,904,535</td>
<td>-62</td>
</tr>
<tr>
<td>Total</td>
<td>16,927,868</td>
<td>229,712,402</td>
<td>91,342,443</td>
<td>-138,369,959</td>
<td>-60</td>
</tr>
</tbody>
</table>

The implementation of projects at existing border crossings and the construction of new border crossings are projected to add $49.1 billion dollars in GDP, 2.0 million jobs, and 30.5 billion dollars in labor income annually to both economies in year 2050 compared to the “do nothing” scenario

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6 Excludes 8 rail projects classified as border crossing projects with a cost of $0.7 billion.

7 For POVs, estimated at $8.69 per hour and an average vehicle occupancy of 1.67 people per vehicle. For CMVs, estimated at $42.46 per hour, which takes into account driver wages, benefits, fuel costs, CMV lease or purchase payments, repair and maintenance, CMV insurance premiums, permits, and licenses, but does not include other productivity losses such as spoilage and goods safety stock (based on American Transportation Research Institute, An Analysis of the Operational Costs of Trucking: 2019 Update). Both values reflect weighted averages of U.S. and Mexican values based on income and population.
reported in Chapter 7. The additional economic impacts for this scenario, compared to the “do nothing” scenario, are presented in Table 11.3-19.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Movement of Goods</td>
<td>$31.0</td>
<td>270,576</td>
<td>$18.3</td>
<td>$16.1</td>
<td>1,675,564</td>
<td>$11.1</td>
</tr>
<tr>
<td>Movement of People</td>
<td>$1.4</td>
<td>29,464</td>
<td>$0.9</td>
<td>$0.6</td>
<td>19,389</td>
<td>$0.2</td>
</tr>
<tr>
<td>Total</td>
<td>$32.3</td>
<td>300,040</td>
<td>$19.2</td>
<td>$16.7</td>
<td>1,694,954</td>
<td>$11.3</td>
</tr>
</tbody>
</table>

**Combined Economic Impacts**

<table>
<thead>
<tr>
<th>GDP (Billions of 2019 $)</th>
<th>$49.1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employment (Job-Years)</td>
<td>1,994,994</td>
</tr>
<tr>
<td>Labor Income (Billions of 2019 $)</td>
<td>$30.5</td>
</tr>
</tbody>
</table>

**POV Impacts under Scenario 3**

Under this scenario, crossing times for POVs in 2050 would decrease from 122.8 million hours under the “do nothing” scenario to 46.9 million hours. This represents a reduction of 62%.

The reductions in POV crossing times under this scenario translate to $2.0 billion in additional GDP, 49,000 additional jobs and $1.1 billion in additional labor income in the year 2050 compared to the “do nothing” scenario.

**CMV Impacts under Scenario 3**

Under this scenario, crossing times for CMVs in 2050 would decrease from 106.9 million hours under the “do nothing” scenario to 44.4 million hours. This represents a reduction of 58%.

The reductions in CMV crossing times under this scenario translate to $47.1 billion dollars of additional GDP, 1.95 million of additional jobs and $29.4 billion in additional labor income in the year 2050 compared to the “do nothing” scenario.

**Summary of Findings**

Overall, the improvements associated with both implementation scenarios contribute to a reduction in border crossing times and a reduction in the cost of missed opportunities for the economies of Texas, U.S., and Mexico. Additional details about the impacts of these two implementation scenarios are provided in Appendix 11B.
11.4 Summary of Implementation Plan

The Implementation Plan in this chapter provides the final component of the BTMP. The plan provides a timeframe for more than 20 policy recommendations, more than 180 programs, and 661 projects, as well as establishes a blueprint for the coming years for the border region, Texas, the U.S., and Mexico to address the movement of people and goods across the Texas-Mexico border.

The Implementation Plan provides a look forward on policy, programs, and projects, providing an integrated approach to achieve the BTMP vision of collaboratively fostering Texas-Mexico transportation planning, programming, implementation, management, and operations.

As a result of the BTMP process, border stakeholders have an opportunity to look at both the level of impact and the timeframe of policies, programs, and projects. This will help decision-makers understand how to best use their limited resources to achieve the BTMP vision and goals.

11.5 Summary of Texas-Mexico Border Transportation Master Plan and Call for Action

The BTMP was an ambitious undertaking to plan for the future of the 1,254-mile Texas-Mexico region. The Texas-Mexico border is an increasingly critical gateway for the economies of the U.S. and Mexico. More than $451 billion in trade crossed the border in 2019—over $24 million in trade each hour.

However, the border region is about more than trade. The 28 vehicle crossings on the Texas-Mexico border and Santa Teresa, NM connect more than 7 million residents, who cross the border regularly to go to work and school, to shop and eat, and to visit family and friends.

To guarantee that the diverse voices of the region’s public and private stakeholders were heard, the BTMP engaged in robust binational and bilingual stakeholder engagement. More than 2,500 individuals from the U.S. and Mexico were involved in the stakeholder engagement process.

The vision of the BTMP, as presented in Chapter 2, was to collaboratively foster integrated and efficient transportation mobility of people and goods across the Texas-Mexico border and to promote economic development that benefits the Texas-Mexico border region, the U.S., and Mexico.

The nine goals, also introduced in Chapter 2, provide strategic direction regarding how to identify and address the multimodal transportation system and infrastructure needs of the border region.

The BTMP uses a data-driven approach to explore the economics of the border region, to look at the region’s past and projections for the future, and to identify issues and needs today and tomorrow.

In the most-likely future scenario, the combination of strong economic growth and the U.S.-Mexico-Canada Agreement results in a tripling of the value of trade between the U.S. and Mexico by 2050. Without a coordinated effort to address this growth, the region will see increased congestion as the growth strains the transportation system. Left unaddressed, the rapid development could ultimately result in a loss of economic opportunity due to congestion and delays.

To address these needs, the BTMP identifies more than 800 strategic solutions—policies, programs, and projects—that work holistically to address the identified issues. Together, they comprise the plan’s recommendations. The strategies are linked to the BTMP goals and examined by their...
geographic reach (country and region), by category of infrastructure they impact (border crossing, corridor, or both), and by the availability and timing of funding.

Finally, the strategies were sorted by their level of impact on the needs—high, medium, or low—in Chapter 10, and by their implementation timeframe—short, medium, and long—in Chapter 11.

The BTMP serves as a blueprint for binational partnerships and decision-making regarding investment strategies to address cross-border multimodal transportation system challenges and to facilitate cross-border movement of people and goods.

### 11.5.1 Call for Action

Over the course of two years, almost 2,600 people were involved in the identification and analysis of the current and future border economy, the needs and issues presented by future economic conditions, and the strategies to address them.

Stakeholders addressed three key issues with respect to carrying out the recommendations of the BTMP. The first is the need to facilitate continuing input from binational stakeholders at the local, regional, state, and federal levels in both the public and private sectors. Texas-Mexico collaboration as a priority crosses every strategy and was mentioned by stakeholders as a key to the successful development, funding, and timely implementation of both programs and projects.

Second, many stakeholders noted the importance of tracking progress on the BTMP. Stakeholders were interested in how the BTMP goals will be met, and whether approaches will need to change in the future, and they want to track progress over time. For example, project sponsors might want an opportunity to provide updates on their priority projects, or a region that is undertaking a new program with some success might want to collaborate with others. In this sense, Texas-Mexico stakeholders will be pivoting from planning to implementation. This will require sustained commitment, collaboration, and focus on making the Texas-Mexico border more efficient, seamless, safe, and resilient. The Border Trade Advisory Committee might serve as the initial organization to oversee implementation of the recommended programs and short-term projects, as opportunities to implement elements of the BTMP are sought.

Finally, stakeholders noted the importance of devoting funds to border transportation infrastructure improvements. In order for the BTMP to move forward, funding and financing commitments must be secured from federal, state, regional, local, and private sources in the United States and Mexico to advance policies, programs, and projects for Texas-Mexico border transportation infrastructure.

Ideas for future actions as part of the BTMP implementation include an annual plan to map out the coming year’s priorities, an annual report to share progress and suggest improvements for the future, and a regional planning summit in each of the three Texas-Mexico border regions to provide accountability for future projects. Finally, an advocacy plan to keep the border at the forefront for local, state, and federal decision-makers in both the U.S. and Mexico is a critical part of the region’s future success.

It is suggested that policies be reviewed at least every 5 years, or during updates of the BTMP, to determine ongoing relevance.
The *Texas-Mexico Border Transportation Master Plan* has produced an unprecedented level of information and ideas.\(^8\) Regional stakeholders in both countries now have an opportunity to exercise that collaborative spirit with renewed energy and purpose.

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\(^8\) The BTMP builds upon the three previous border master plans (BMPs) developed between 2012 and 2013 for El Paso/Santa Teresa/Chihuahua, Laredo/Coahuila/Nuevo León/Tamaulipas, and Rio Grande Valley/Tamaulipas. As such, these BMPs laid the groundwork for the BTMP.
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